Part B
DLT 2
QA

ETICAM-Fernley, Nv.

Part B Permit
Class 2
Modification
Request

Revised 7/11/1990

ETICAM

Rec'd 7/16/90
DPG

July 11, 1990

Daniel Gross, P.E.
Waste Management Section
Nevada Division of Environmental Protection
123 West Nye Lane
Capitol Complex
Carson City, NV 89710

Re: Response to Request for Additional Information
Class 2 Modification request Dated December 28, 1989

Dear Mr. Gross;

Enclosed are 2 copies of a revised Modification Request incorporating your comments and requested revisions. One additional copy has be placed at the Public Library in Fernley.

Sincerely,

Byron B Bradd

Byron B. Bradd, P.E.
General Manager

Rhode Island
Corporate/Sales:
410 South Main Street
Providence, RI 02903
Telephone: (401) 831-7242
1-800-541-8673
FAX: (401) 831-7383

Rhode Island
Plant:
25 Graystone Street
Warwick, RI 02886
Telephone: (401) 738-3261
FAX: (401) 738-1073
EPA# RID 980906986

Nevada
2095 Newlands Dr. E.
Fernley, NV 89408
Telephone: (702) 575-2760
1-800-648-9931
FAX: (702) 575-2803
EPA# NVD 980895338

Texas
3201 Lucius McCelvey Drive
Temple, TX 76500
EPA# TXD 981903768

Illinois
3001 Highway #3
Granite City, IL 62040
EPA# ILD 981531643

ETICAM - FERNLEY, NEVADA

PART B PERMIT

CLASS 2 MODIFICATION REQUEST
OF
DECEMBER 28, 1989

ADDITIONS AND REVISIONS

JULY 11, 1990

DECEMBER 28, 1989

CLASS 2 PERMIT MODIFICATION

ADDITIONS AND REVISIONS
of
July 11, 1990

CONTENTS

ETICAM
Fernley, Nevada

December 28, 1989
Part B Permit Modification

ADDITIONS AND REVISIONS
of
July 11, 1990

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

S A Simmons — NAME

7/11/90 — DATE

_____ — TITLE

Rhode Island
Corporate/Sales:
410 South Main Street
Providence, RI 02903
Telephone: (401) 831-7242
1-800-541-8673
FAX: (401) 831-7383

Rhode Island
Plant:
25 Graystone Street
Warwick, RI 02886
Telephone: (401) 738-3261
FAX: (401) 738-1073
EPA# RID 980906986

Nevada
2095 Newlands Dr. E.
Fernley, NV 89408
Telephone: (702) 575-2760
1-800-648-9931
FAX: (702) 575-2803
EPA# NVD 980895338

Texas
3201 Lucius McCelvey Drive
Temple, TX 76500
EPA# TXD 981903768

Illinois
3001 Highway #3
Granite City, IL 62040
EPA# ILD 981531643

INTRODUCTION

This modification request entails the expansion of existing operations and the addition of solids handling facilities needed to handle materials already permitted for receipt at the facility. Table 1 of this section shows a "New Tank Summary" of the new tanks in this request.

The modifications are as follows:

1. An increase in the total volume of receiving/ storage treatment tanks of less than 25 %. See Table 1 for new tank summary. A new scrubber will be added to control potential air emissions from the new reactors.

2. The installation of additional filtration equipment and related tanks. See Table 1, item 5.

* Note that a listing of the new tanks is provided in section 10, and the existing tanks are listed on Sheet C in Section 8.

3. Additional dryers with a bag house dust collector system to control potential dust emissions.

The appropriate sections of the permit effected by this modification are included in this modification request.

Note that some of the tanks, storage areas, and equipment at the facility are operating under interim status. These facilities are under permitting evaluation under a separate Class 3 modification request submitted on December 28, 1989.

B. Not Subject to 25% Limit

5. Slurry & Filtrate Tanks *	Gallons
C-3	7,000
C-4	7,000
S-29A (Replacement)	777 (Increase)
S-29B (Replacement)	777 (Increase)
Subtotal filtration tanks	15,554

TOTAL ALL NEW TANKS AND INCREASES 50,941

* Note: These tanks are permitted under section 270.42 on Appendix I, Item G.Tanks, 1:a. through d. This specifies that tanks representing increases greater than the 25 % increase may be modified under class 2 procedures if their use involves neutralization, dewatering, phase separation, or component separation. These tanks are integral parts of the facility's dewatering (filtration) system. Also note page 37928 FR vol.53 No. 188 / Wednesday, September 28, 1988.

6. Dryers

# 5	5 cu yds
# 6	5 cu yds
# 1,2 3 (Existing)	1 cu yds

New Tank Summary

A. Volume Increase
(subject to 25 % limit)

		gallons
1.	New Reactor Tanks	
	T-4 Replaces existing T-4 New Volume = 3,830 Old Volume = 2,853 --- Net increase = ...	977
	T-5	3,500
	T-6	8,140
	T-7	8,140
2.	Sludge Receiving/storage hoppers	
	H-1	5,000
	H-2	5,000
3.	Dissolution Tank (D-1)	3,830
4.	Pug Mill Mixer	800
	Total subject to 25 % expansion	35,387

Note: 25 % increase over current permitted capacity of 170,351 gallons = 42,588 gallons.

2. FACILITY DESCRIPTION

ETICAM provides a variety of treatment and recycling options for a wide range of waste streams, generated primarily by the metal finishing and electronics industries.

One of the most important aspects of the services offered by ETICAM is the variety of treatment and recycling options which are custom tailored for each individual waste category. Metal products may be directly produced for resale to industry, or prepared for further processing at a smelter or other manufacturing facility where the final product is made.

A significant benefit to the customer is the elimination of the "cradle to grave" liability that otherwise exists when waste materials are directly disposed of at a landfill. Another benefit is the recovery of valuable resources such as strategic metals.

GENERAL INFORMATION

ETICAM can reclaim metals from waste generated in the metal finishing industry, specifically; liquids and solids from electroplating, anodizing, and printed circuit board manufacturing, as well as those from the photographic, and refinery industries. These metals include:

Chromium	Vanadium
Nickel	Titanium
Copper	Molybdenum
Zinc	Gold
Lead	Silver
Cadmium	Palladium
Tin	Platinum
Cobalt	Tungsten

Overview

The treatment and reclamation process is essentially a semi-continuous batch system, controlled through a fully programmable command unit which incorporates interlocks and alarm systems.

Major attention has been given to safety and environmental protection which include gas detection devices located throughout the facility. All waste receiving, storage, and treatment areas are inside a totally enclosed building, which additionally is designed to contain a potential spill of the combined total of all storage tanks.

Other safety measures include provision of protective clothing, emergency protection equipment, training programs for personnel and compliance with all requirements of RCRA and OSHA procedures.

The plant is divided into seven areas:

Receiving Bays

Storage Bays

Treatment Reactors

Solids Dewatering

Drying

Metal Recovery

Receiving/Storage

Storage tanks are located within concrete berms, sufficiently large to contain a total spill of all tanks within the containment area. The concrete is coated with chemical resistant materials. Additionally, non compatible wastes and materials are further separated by smaller containment cells, again sufficient to contain more than the total volume of all tanks within the cell. Storage tanks are vented into a wet scrubber.

Prior to receiving a waste shipment, a Generator Waste Profile (GWP Form), accompanied by a sample, is received for review, which, in addition to undergoing detailed chemical analysis, will be evaluated through a treatability study. Once waste has been approved for treatment, the "authorization" is given for shipment of the waste. On arrival of the truck, a further sample is taken to confirm the contents of the shipment. Only then is the truck allowed to unload into the appropriate storage tank.

The approval to unload is given by a trained laboratory technician, and the entire unloading operation is continuously monitored by plant operators. The wastes are categorized generally into:

Acids
Alkalis
Cyanides
Chromates
Sulfides
Inorganic liquids and solids

Treatment

Reactors are located in a separate bay. All reaction tanks are vented into wet scrubbers. This design allows for purification of any potential air containments from the process.

After completion of the treatment cycle (which is monitored through laboratory analysis), processed waste is pumped into settling vessels and the solids are separated with a filter press.

The treated liquid, which is now essentially free of toxic metal contamination, is analyzed again at several stages before discharge from the holding tank.

Sludge Dewatering/Drying

Filtrate from the filter presses is returned to settling tanks to ensure freedom from solids; the filter cake is then dried.

The dryer emissions are filtered or scrubbed through individual wet scrubbers assigned to each unit. Finally the dried cake is assayed for its metal content before being packed into containers and shipped to smelters or other processing plants.

Metal Recovery

Some of the processing will entail leaching with acid or caustic solutions to extract the metal content from sludges and solids. Spent and off spec catalysts containing molybdenum, nickel, tungsten, cobalt, copper, and chrome can be reclaimed by this process. All residuals from these materials will generally be recycled. The metals will be concentrated into various forms for resale to the primary and secondary metals industries.

Questions

Stabilization

The residual sludges from the leaching or extraction process may require disposal, if no useful material remains. Additionally, residual salts from the evaporation of the treated effluent are considered a listed hazardous waste by the "Derived From" rule. This rule defines any material derived from the treatment of a "listed" hazardous waste to be a hazardous waste of the same listing.

These materials, along with certain sludges, which may be destined for landfill disposal require additional treatment to meet the Land Disposal Restrictions. A pug mill mixer is provided for mixing the solids with various stabilizing agents as required to meet these treatment standards.

270.42(b)(iii): Why the modification is needed:

The modifications in this Class 2 application are a partial completion of the modifications needed to properly operate the facility. Modifications requested concurrently under a Class 3 procedure include the full modifications. Many safety improvements are included in these modifications.

This Class 2 modification utilizes the 25 % tank expansion limit for Class 2 modifications to initiate a partial modification on a timely bases.

The modifications in this Class 2 request are needed for the following reasons:

1. Additional reactor tanks are required to allow proper treatment and segregation of non compatible wastes. The existing reactors are additionally not designed for temperatures greater than 55 degrees C, and there are insufficient numbers of reactors to achieve a reasonable treatment capacity for the facility to be economically viable.

Piping revisions will provide better segregation, eliminate cross mixing, and pipe runs will be located in safer positions.

2. Additional sludge holding tanks and filters are required to provide separation of types of metal waste so that recycling can be accomplished. Additionally, filtration times for some wastes is lengthy, and more filters are required to handle treated wastes from the additional reactors.

3. Sludge receiving hopper tanks are required to technically receive sludges. The existing tank system was designed for liquids with up to 10 to 20 per cent solids. The F006 filter cakes specified in the permit require different handling procedures for which the hoppers are designed.

4. The addition of the dissolution tank is needed to properly and safely transfer solids into a suspension for a number of possible treatment steps. These include extraction of metals from sludges, re-slurrying cyanide bearing solids for cyanide treatment, and washing filter cakes to remove soluble salts or metal contaminants to meet smelter specifications. Current equipment requires manual transfer by plant operators with shovels.

5. Stabilization of solids is needed to meet the recently promulgated Land Disposal Restrictions which require stabilization before land disposal is permitted. Solids requiring this treatment include waste salts, non metal bearing sludges, and metal extraction residues.

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label is complete and correct, you need not complete items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X	
B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous waste? (FORM 3)	X		
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	
J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP: ETICAM

IV. FACILITY CONTACT

A. NAME & TITLE (last, first, & title)	B. PHONE (area code & no.)
2 BYRON B. BRADD, P.E. - GENERAL MNG	702 575 2760

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX			
3 2095 Newlands drive E.			
B. CITY OR TOWN	**C. STATE**	**D. ZIP CODE**	
4 FERNLEY	NV	89408	

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER			
5 2095 NEWLANDS DRIVE EAST			
B. COUNTY NAME			
LYON			
C. CITY OR TOWN	**D. STATE**	**E. ZIP CODE**	**F. COUNTY CODE (if known)**
6 FERNLEY	NV	89408	

CONTINUE ON REVERSE

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
4953 (specify) Refuse System	3999 (specify) Misc. Manufacturing

C. THIRD	D. FOURTH
7399 (specify) Recycling, Business Services	(specify)

VIII. OPERATOR INFORMATION

A. NAME: ETICAM

B. Is the name listed in Item VIII-A also the owner? ☐ YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL; M = PUBLIC (other than federal or state); S = STATE; O = OTHER (specify); P = PRIVATE

D. PHONE (area code & no.): A

E. STREET OR P.O. BOX: 410 South Main St.

F. CITY OR TOWN: Providence

G. STATE: RI

H. ZIP CODE: 02903

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)	
9N NEV5004	9P 1617	Evaporator, Crystallizer, Falling Film
B. UIC (Underground Injection of Fluids)	**E. OTHER** (specify)	
9U	9 615 (specify) Scrubber	
C. RCRA (Hazardous Wastes)	**E. OTHER** (specify)	
9R NEVHW001	9 (specify)	

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Hazardous waste treatment, Storage, Reclamation, Recycling

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Benjamin A. Simmons, President	Benjamin A. Simmons	July 11, 1990

COMMENTS FOR OFFICIAL USE ONLY

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F N V D 9 8 0 8 9 5 3 3 8

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[ ] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*: 8 | YR. | MO. | DAY

[ ] 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN: YR. 87 | MO. 04 | DAY 21

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[X] 1. FACILITY HAS INTERIM STATUS (For evaporator & salt)

[X] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided: Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G	
X-2	T03	20	E	
1	S01	242,000	G	
2	S02	268,793	G	
3	T01	83,000	U	
4				
5				
6				
7				
8				
9				
10				

CONTINUE ON REVERSE

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number(s) from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV (shown in line numbers X-1, X-2, X-3, and X-4 below) — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

NOTE: 124,000 tons per year is the combined quantity of all codes.

EPA I.D. NO. (enter from page 1)

N V D 9 8 0 8 9 5 3 3 8 | T/M | C | 6

VI. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VII. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VIII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
32 36 37 0	119 12 07 0

IX. FACILITY OWNER

A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code & no.)

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
	C G		

X. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
Benjamin A. Simmons	Benjamin A. Simmons	July 11, 1990

XI. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
	Benjamin A. Simmons	7/11/90

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): W

FOR OFFICIAL USE ONLY: W DUP T/A 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	D002	124,000	T	S01 S02 T01	
2	D003				"Included with above"
3	D006				"Included with above"
4	D007				"Included with above"
5	D008				"Included with above"
6	D011				"Included with above"
7	F006				"Included with above"
8	F007				"Included with above"
9	F008				"Included with above"
10	F009				"Included with above"
11	F010				"Included with above"
12	F011				"Included with above"
13	F012				"Included with above"
14	F019				"Included with above"
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

EPA Form 3510-3 (6-80)

CONTINUE ON REVERSE

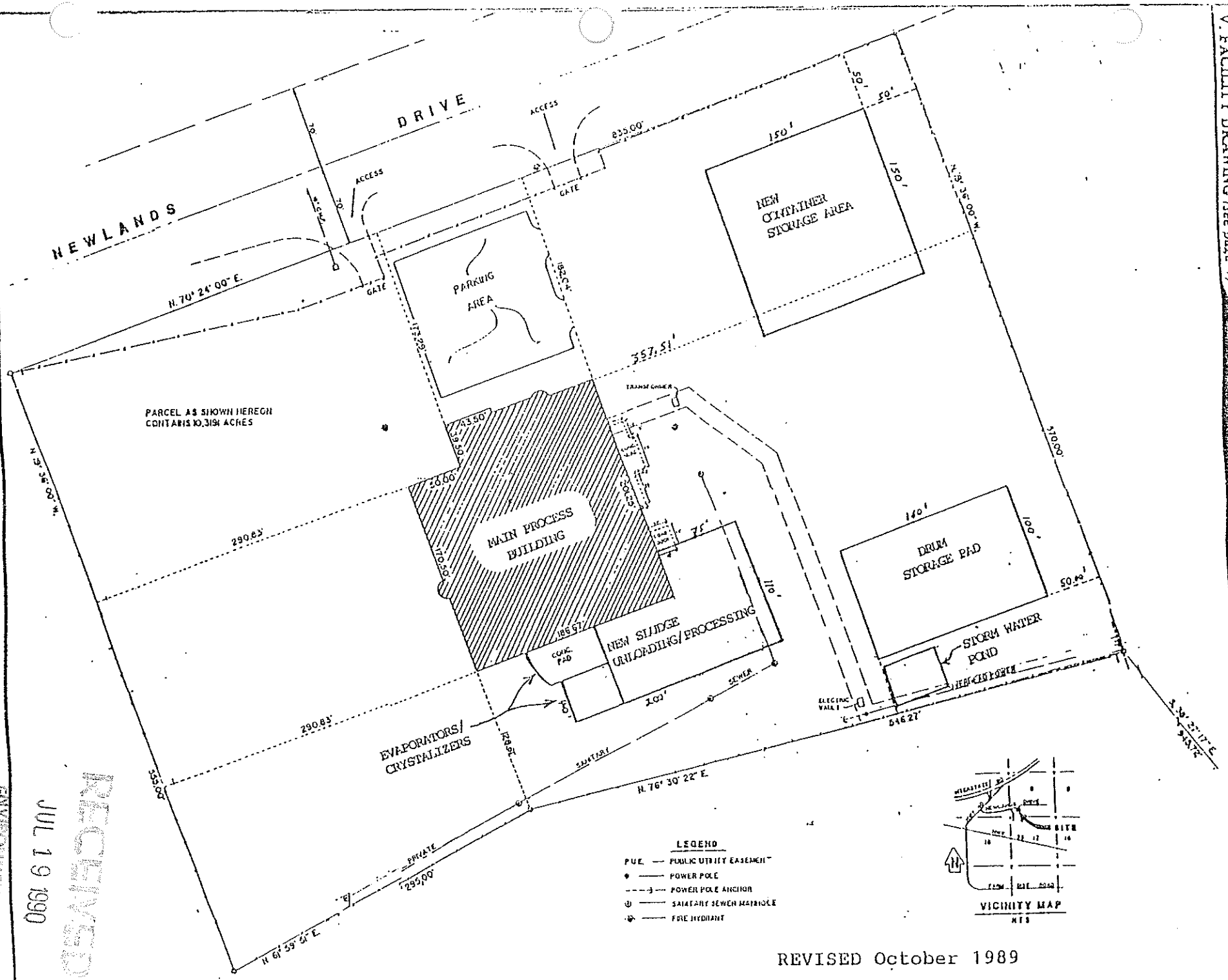
4. PART A: Form 3, Item B-2

Tank Volume Summary

	Gallons
1. Existing Permitted Tanks	170,351
2. Interim Status Tanks	45,279
3. New Tanks & Volume increases	50,941
4. Dryers (11 cu yds)	2,222
Total Capacity	268,793

Continued from page 4.

V. FACILITY DRAWING (see page 4)



REVISED October 1989

5.(a) REVISED PAGES TO PERMIT

PART IV - STORAGE IN TANKS

A. WASTE IDENTIFICATION

The Permitte may store the following hazardous waste in tanks, subject to the terms of this permit:

	Tank No(s).	Waste Type	EPA Hazardous Waste No(s).
a.	S-1 thru S-2 S-11 thru S-15	Cyanide	F007, F008, F009, F011, F012, D002, D003, D006, D007, D008, D011
b.	S-3 thru S-6	Alkaline	D002, D003, D006, D007, D008, D011, F006
c.	S-7 thru S-10 S-16 thru S-23 S-25 thru S-28	Acid	D002, D006, D007, D008, D011 F006, F019
d.	S-11.1	Acid/Alkaline Spillage	D002, D006, D007, D008, D011, F006, F019

* Note: there is no S-24

B. DESIGN AND CONSTRUCTION OF TANKS

The Permittee shall construct, modify, and maintain all tanks in accordance with the plans and specifications in Attachment 10. The Permittee shall maintain the minimum shell thickness specified below at all times to ensure sufficient structural strength.

	Tank No(s).	Minimum Shell Thickness (Inches)
a.	S-1 thru S-2	0.94
b.	S-3 thru S-6	0.94
c.	S-7 thru S-10	0.94
d.	S-11 and S-12	0.63
e.	S-13 thru S-20	0.63
f.	S-21 thru S-23 S-25 thru S-28 & S-11.1	0.63
g.	S-29A & S-29B	0.53

The maximum inventory of hazardous waste in storage/treatment at any one time is estimated to be **218,938** gallons, which shall be the maximum allowable storage volume.

C. PROTECTION FROM OVERFILLING

The Permittee shall prevent overfilling of tanks by the methods specified in Attachment 10 and summarized below.

	Tank No(s).	Minimum Shell Thickness (Inches)
a.	S-1 thru S-29	Liquid level indicator which signals when tank is full to prevent overfilling.

D. PROTECTION FROM CORROSION

The Permittee shall protect tanks from accelerated corrosion, erosion, and abrasion as specified in Attachment 10 and summarized below.

	Tank No(s).	Type of Protection
a.	S-1 thru S-8	Polypropylene
b.	S-9 thru S-10	Polyvinyl Chloride
c.	S-11 thru S-26	Polypropylene
d.	S-27, S-28	PVC lined fiberglass
e.	S-29.1, 29.2	Polyethylene

E. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

1. Special Requirements. The Permittee shall not place ignitable or reactive waste in a tank unless the procedures described in Attachment 8 are followed.

2. Documentation. The Permittee shall document compliance with the above permit condition as required by NAC 444.8895 and 40 CFR subsection 264.17(c) and place this documentation in the operating record (permit condition Part II.G.1).

3. Buffer Zones. The Permittee shall comply with the buffer zone requirements for all tanks as listed in Table 2-2 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code, 1981".

PART V - TREATMENT IN TANKS

A. WASTE IDENTIFICATION

The Permittee may treat the following hazardous waste in tanks, subject to the terms of this permit:

	Tank No(s).	Waste Type	EPA Hazardous Waste No(s).
a.	T-5, T-6, T-7	Cyanide, Sulfide, Alkaline	F006, F007, F008, F009, F011, F012, F019, D002, D003, D006, D007, D008, D011
b.	T-1, T-2, T-3,	Acid or Alkaline	D002, D006, D007, D008, D011 F006, F019
c.	T-4 D-1	Acid or Alkaline Sulfide & Cyanide	F006, F007, F008, F009, F011, F012, F019, D002, D003, D006, D007, D008, D011
d.	C-1 thru C-4	Clarifiers	All of the above codes *
e.	S-29.1/29.2	Neutralization & Final treatment	All of the above codes *
g.	H-1, H-2	Solids Hoppers	D002, D003, D006, D007, D008, D011, F006, F007, F008, F009, F011, F012, F019
h.	Dryers # 1 thru 5	Sludge Drying	All of the above codes *
i.	Pug Mill	Stabilization	All of the above codes *

* Note: The "Derived From" rule requires these tanks to handle all waste codes.

B. DESIGN AND CONSTRUCTION OF TANKS

The Permittee shall construct, modify, and maintain all tanks in accordance with the plans and specifications in Attachment 10. The Permittee shall maintain the minimum shell thickness specified below at all times to ensure sufficient structural strength.

	Tank No(s).		Minimum Shell Thickness (Inches)	
a.	T-1, T-3	(Polypropylene)	0.47	
b.	T-2, T-4	(Fiberglass)	0.50	
c.	T-5, T-6, T-7	(Rubber lined Steel)	0.25	
d.	C-1, C-2	(Polypropylene)	0.94	
e.	C-3, C-4	(Cross Linked Polyethylene)	0.20 0.53 1.22	Top sidewall mid sidewall 12 " bottom
f.	H-1, H-2	(Steel)	0.25	
g.	D-1	(Polypropylene) (Rubber lined steel)	0.47 0.25	

C. PROTECTION FROM OVERFILLING

The Permittee shall prevent overfilling of tanks by the methods specified i Attachment 10 and summarized below.

	Tank No(s).	Type of Control
a.	T-1 thru T-7	Liquid level indicator which signals
b.	C-1 Thru C-4	when tank is full to prevent over-
c.	D-1	topping.

D. PROTECTION FROM CORROSION

The Permittee shall protect tanks from accelerated corrosion, erosion, and abrasion as specified in Attachment 10 and summarized below.

Tank No.(s).	Type of Protection
a. T-1 thru T-7	Polypropylene, fiberglass, polyethylene, or rubber lined steel
b. C-1 thru C-4	Polyethylene or Polypropylene
c. D-1	Polypropylene, or rubber lined steel
d. H-1, H-2	Epoxy Coating

E. TREATMENT OF WASTES IN TANKS

The Permittee shall treat hazardous wastes as specified in the application, and in accordance with NAC 444.9115 and 444.9120 and 40 CFR subsection 264.191 and 264.192.

F. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

1. Special Requirements. The Permittee shall not place ignitable or reactive waste in a tank unless the procedures described in Attachment 8 are followed.
2. Documentation. The Permittee shall document compliance with the above permit condition as required by NAC 444.8895 and 40 CFR subsection 264.17(c) and place this documentation in the facility operating record (permit condition Part II.G.1).

2. (b) ADDITIONAL INFORMATION

Part 270.13 through 270.22

The original permit application and permit covered the items specified in this section. The 25 % expansion in tank capacity utilizes the same waste codes and basic treatment methods. Items which have changed, or may change due to the modification are outlined below.

270.13 Part A Contents

Revised to show additional tank volume. Note that interim status tanks and containers are included in the total. Sheet C in Section 8 shows the location and volumes of all existing tanks. A listing of the additional tanks is summarized in Section 10.

270.14 Part B Contents

(7) A copy of the revised contingency plan is included.

(8) The procedures to prevent hazards, runoff, contamination of water supplies, mitigate effects of equipment failure, and prevent undue exposure to personnel are included in the original application. These procedures do not change with the tank expansion.

(10) Traffic patterns will not exceed the volume specified or planned for in the original application and permit.

(13) The revised closure plan is included. (An additional copy of the "old plan" and "new plan" is included with highlighted deletions and additions.)

270.15 Containers

Not applicable with this Class 2 modification.

270.16 Tank Systems

(a) A written Tank Assessment is submitted separately.

(j) Operating procedures for reactive or incompatible wastes remain the same as specified in the original application. The new receiving building addition will meet or exceed these specifications.

270.17 Surface Impoundments

Not applicable

270.18 Waste Piles

Not applicable.

270.19 Incinerators

Not applicable

270.20 Land Treatment

Not applicable.

270.21 Landfills

Not applicable.

270.22 Miscellaneous Units

Not applicable.

3.80 Waste Analysis Requirements for Land Disposal Restrictions.

Wastes which are hazardous by the derived from rule or by characteristics will meet the TCLP requirements for land disposal at a landfill permitted to dispose of hazardous wastes. If the TCLP test indicates that the wasted exceed the minimum standards then the waste would be retreated or stabilized prior to disposal. The following pages detail Method EF 2001 The Preparation of TCLP Extract and Tables C-3a and C-3b list the test methods used to determine the toxic characteristics and concentrations.

The "Paint Filter Test" will be used to measure "free liquids".

FINAL TREATMENT STANDARDS FOR FIRST- AND SECOND-THIRD WASTES

Hazardous waste description	Constituents of concern	Nonwastewater: Total composition, mg/kg[1]	Nonwastewater: TCLP, mg/L[1]	Wastewater, total composition, mg/L[1]	Effective date[2]
F006 — Wastewater treatment sludges from electroplating operations	Cadmium	—	0.066	†	8/8/88 for metals; 7/8/89 for cyanides; 6/7/89 for injection of nonwastewaters
	Chromium (total)	—	5.2		
	Lead	—	0.51		
	Nickel	—	0.32		
	Silver	—	0.072		
	Cyanides (Total)	590	—		
	Cyanides (Amenable)	30	—		
F007 — Spent cyanide plating bath solutions from electroplating operations.	Cadmium	—	0.066	—	7/8/89; 6/8/91 for injection
	Chromium (Total)	—	5.2	0.32	
	Cyanides (Total)	590	—	1.9	
	Cyanides (Amenable)	30	—	0.10	
	Lead	—	0.51	0.04	
	Nickel	—	0.32	0.44	
	Silver	—	0.072	—	
F008 — Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process.	Cadmium	—	0.066	—	7/8/89
	Chromium (Total)	—	5.2	0.32	
	Cyanides (Total)	590	—	1.9	
	Cyanides (Amenable)	30	—	0.10	
	Lead	—	0.51	0.04	
	Nickel	—	0.32	0.44	
	Silver	—	0.072	—	
F009 — Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	Cadmium	—	0.066	—	7/8/89
	Chromium (Total)	—	5.2	0.32	
	Cyanides (Total)	590	—	1.9	
	Cyanides (Amenable)	30	—	0.10	
	Lead	—	0.51	0.04	
	Nickel	—	0.32	0.44	
	Silver	—	0.072	—	
F010 — Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process.	Cyanides (Total)	1.5	—	1.9	6/8/89
	Cyanides (Amenable)	—	—	0.10	
F011 — Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	Cadmium	—	0.066	—	7/8/89[6]
	Chromium (Total)	—	5.2	0.32	
	Cyanides (Total)	110	—	1.9	
	Cyanides (Amenable)	9.1	—	0.10	
	Lead	—	0.51	0.04	
	Nickel	—	0.32	0.44	
	Silver	—	0.072	—	

FINAL TREATMENT STANDARDS FOR FIRST- AND SECOND-THIRD WASTES—Continued

Hazardous waste description	Constituents of concern	Nonwastewater: Total composition, mg/kg[1]	Nonwastewater: TCLP, mg/L[1]	Wastewater, total composition, mg/L[1]	Effective date[2]
F012 — Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.	Cadmium	—	0.066	—	7/8/89[6]
	Chromium (Total)	—	5.2	0.32	
	Cyanides (Total)	110	—	1.9	
	Cyanides (Amenable)	9.1	—	0.10	
	Lead	—	0.51	0.04	
	Nickel	—	0.32	0.44	
	Silver	—	0.072	—	
F024 — Wastes including but not limited to, distillation residues, heavy ends, tars and reactor clean-out wastes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes. [This listing does not include light ends, spent filters and filter aids, spent desiccants, wastewater, wastewater treatment sludges, spent catalysts, and wastes listed in Section 261.32.].	2-Chloro-1,3-butadiene	0.28	—	0.28	6/8/89
	3-Chloropropene	0.28	—	0.28	
	1,1-Dichloroethane	0.014	—	0.014	
	1,2-Dichloroethane	0.014	—	0.014	
	1,2-Dichloropropane	0.014	—	0.014	
	cis-1,3-Dichloropropene	0.014	—	0.014	
	trans-1,3-Dichloropropene	0.014	—	0.014	
	Bis(2-ethylhexyl)phthalate	1.8	—	0.036	
	Hexachloroethane	1.8	—	0.036	
	Hexachlorodibenzofurans	0.001	—	0.001	
	Hexachlorodibenzo-p-dioxins	0.001	—	0.001	
	Pentachlorodibenzofurans	0.001	—	0.001	
	Pentachlorodibenzo-p-dioxins	0.001	—	0.001	
	Tetrachlorodibenzofurans	0.001	—	0.001	
	Chromium (Total)	—	—	0.35	
	Nickel	—	—	0.47	
K001 — Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	Naphthalene	8.0	—	0.15	8/8/88; 6/7/89 for injection
	Pentachlorophenol	37	—	0.88	
	Phenanthrene	8.0	—	0.15	
	Pyrene	7.3	—	0.14	
	Toluene	0.14	—	0.14	
	Xylenes	0.16	—	0.16	
	Lead	—	0.51	0.037	
K004 — Wastewater treatment sludge from the production of zinc yellow pigments				†	8/8/88[9]
K005 — Wastewater treatment sludge from the production of chrome green pigments.	——No land disposal based on no generation[13]——			††††	6/8/89 for surface disposal and underground injection of nonwastewasters

FINAL TREATMENT STANDARDS FOR FIRST- AND SECOND-THIRD WASTES—Continued

Hazardous waste description	Constituents of concern	Nonwastewater: Total composition, mg/kg[1]	Nonwastewater: TCLP, mg/L[1]	Wastewater, total composition, mg/L[1]	Effective date[2]
K052 (Continued)	Phenol	2.7	—	0.047	
	Toluene	9.5	—	0.011	
	Xylenes	—	—	0.011	
	Arsenic	—	0.004	—	
	Chromium (total)	—	1.7	0.20	
	Lead	—	—	0.037	
	Nickel	—	0.048	—	
	Selenium	—	0.025	—	
K060 — Ammonia-still lime sludge from coking operations	—No land disposal based on no generation[14]—			†	8/8/88; 6/7/89 for injection of nonwastewaters
K061 — Emission control dust/sludge from the primary production of steel in electric furnaces — high-zinc subcategory (≥15% zinc) interim standards effective until 8/8/90	Cadmium	—	0.14	†	8/8/88; 6/7/89 for injection of nonwastewaters
	Chromium (total)	—	5.2		
	Lead	—	0.24		
	Nickel	—	0.32		
High-zinc subcategory effective after 8/7/90	—No land disposal based on recycling—			†††	8/8/90; 6/7/89 for injection of nonwastewaters
Low-zinc subcategory (<15% zinc)	Cadmium	—	0.14	†	8/8/88; 6/7/89 for injection of nonwastewaters
	Chromium (total)	—	5.2		
	Lead	—	0.24		
	Nickel	—	0.32		
K062 — Spent pickle liquor generated by steel finishing operations at facilities with-in the iron and steel industry (SIC codes 331 and 332)	Chromium (total)	—	0.094	0.32	8/8/88; 8/8/90 for injection
	Nickel	—	—	0.44	
	Lead	—	0.37	0.04	
K069 — Emission control dust/sludge from secondary lead smelting — noncalcium sulfate subcategory	—No land disposal based on recycling[14]—			†	8/8/88; 6/7/89 for injection of nonwastewaters[14]

TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT

Waste code	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/l)
D004	Table CCW in 268.43.	Arsenic	7440-38-2	NA	5.0#
D005	Table CCW in 268.43.	Barium	7440-39-3	NA	100
D006	Table CCW in 268.43.	Cadmium	7440-43-9	NA	1.0
D007	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA	5.0
D008	Table CCW in 268.43.	Lead	7439-92-1	NA	5.0
D009 (Low Mercury Subcategory—less than 260 mg/kg Mercury).	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA	0.20
D010	Table CCW in 268.43.	Selenium	7782-49-2	NA	5.7
D011	Table CCW in 268.43.	Silver	7440-22-4	NA	5.0
F001–F005 spent solvents	Table 2 in 268.42 and Table CCW in 268.43.	Acetone	67-64-1	0.05	0.59
		n-Butyl alcohol	71-36-3	5.0	5.0
		Carbon disulfide	75-15-0	1.05	4.81
		Carbon tetrachloride	56-23-5	0.05	0.96
		Chlorobenzene	108-90-7	0.15	0.05
		Cresols (and cresylic acid)		2.82	0.75
		Cyclohexanone	108-94-1	0.125	0.75
		1,2-Dichlorobenzene	95-50-1	0.65	0.125
		Ethyl acetate	141-78-6	0.05	0.75
		Ethylbenzene	100-41-4	0.05	0.053
		Ethyl ether	60-29-7	0.05	0.75
		Isobutanol	78-83-1	5.0	5.0
		Methanol	67-56-1	0.25	0.75
		Methylene chloride	75-9-2	0.20	0.96
		Methyl ethyl ketone	78-93-3	0.05	0.75
		Methyl isobutyl ketone	108-10-1	0.05	0.33
		Nitrobenzene	98-95-3	0.66	0.125
		Pyridine	110-86-1	1.12	0.33
		Tetrachloroethylene	127-18-4	0.079	0.05
		Toluene	108-88-3	1.12	0.33
		1,1,1-Trichloroethane	71-55-6	1.05	0.41
		1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1.05	0.96
		Trichloroethylene	79-01-6	0.062	0.091
		Trichlorofluoromethane	75-69-4	0.05	0.96
		Xylene		0.05	0.15
F006	Table CCW in 268.43.	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F007	Table CCW in 268.43.	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F008	Table CCW in 268.43.	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F009	Table CCW in 268.43.	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F011	Table CCW in 268.43.	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F012	Table CCW in 268.43.	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F019	Table CCW in 268.43.	Chromium (Total)	7440-47-32	NA	5.2
F020–F023 and F026–F028 dioxin containing wastes.*.		HxCDD-All Hexachlorodibenzo-p-dioxins.		<1 ppb	<1 ppb
		HxCDF-All Hexachlorodibenzofurans		<1 ppb	<1 ppb
		PeCDD-All Pentachlorodibenzo-p-dioxins.		<1 ppb	<1 ppb
		PeCDF-All Pentachlorodibenzofurans		<1 ppb	<1 ppb
		TCDD-All Tetrachlorodibenzo-p-dioxins.		<1 ppb	<1 ppb
		TCDF-All Tetrachlorodibenzofurans		<1 ppb	<1 ppb
		2,4,5-Trichlorophenol	95-95-4	<0.05 ppm	<0.05 ppm
		2,4,6-Trichlorophenol	88-06-2	<0.05 ppm	<0.05 ppm

TABLE CCWE—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

Waste code	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/l)
		2,3,4,6-Tetrachlorophenol	58-90-2	<0.05 ppm	<0.05 ppm
		Pentachlorophenol	87-86-5	<0.01 ppm	<0.01 ppm
F024	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.073
		Lead	7439-92-1	NA	0.021
		Nickel	7440-02-0	NA	0.088
F039	Table CCW in 268.43	Antimony	7440-36-0	NA	0.23
		Arsenic	7440-38-2	NA	5.0
		Barium	7440-39-3	NA	52
		Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Mercury	7439-97-6	NA	0.025
		Nickel	7440-02-0	NA	0.32
		Selenium	7782-49-2	NA	5.7
		Silver	7440-22-4	NA	0.072
K001	Table CCW in 268.43	Lead	7439-92-1	NA	0.51
K002	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K003	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K004	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K005	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K006 (anhydrous)	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K006 (hydrated)	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	5.2
K007	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K008	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K015	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Lead	7439-92-1	NA	0.2
K021	Table CCW in 268.43	Antimony	7440-36-0	NA	0.23#
K022	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	5.2
		Nickel	7440-02-2	NA	0.32
K028	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.073
		Lead	7439-92-1	NA	0.021
		Nickel	7440-02-0	NA	0.088
K031	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K046	Table CCW in 268.43	Lead	7439-92-1	NA	0.18
K048	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K049	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K050	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K051	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K052	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K061 (Low Zinc Subcategory—less than 15% Total Zinc).	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.14
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.24
		Nickel	7440-02-0	NA	0.32
K062	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K069 (Calcium Sulfate Subcategory)	Table 2 in 268.42 and Table CCW in 268.43.	Cadmium	7440-43-9	NA	0.14
		Lead	7439-92-1	NA	0.24
K071 (Low Mercury Subcategory—less than 16 mg/kg Mercury).	Table CCW in 268.43	Mercury	7439-97-6	NA	0.025
K083	Table CCW in 268.43	Nickel	7440-02-0	NA	0.088
K084	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K086	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K087	Table CCW in 268.43	Lead	7439-92-1	NA	0.51
K100	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
K101	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K102	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K106 (Low Mercury Subcategory—less than 260 mg/kg Mercury—residues from RMERC).	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA	0.20
K106 (Low Mercury Subcategory—less than 260 mg/kg Mercury—that are not residues from RMERC).	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA	0.025

wastes that are prohibited under § 268.32(e)(1) of this part must be incinerated in accordance with the requirements of 40 CFR part 264, subpart O or 40 CFR part 265, subpart O. These treatment standards do not apply where the waste is subject to a part 268, subpart C treatment standard for specific HOC (such as a hazardous waste chlorinated solvent for which a treatment standard is established under § 268.41(a)).

TABLE 1.—TECHNOLOGY CODES AND DESCRIPTION OF TECHNOLOGY-BASED STANDARDS

Technology code	Description of technology-based standard
ADGAS	Venting of compressed gases into an absorbing or reacting media (i.e., solid or liquid)—venting can be accomplished through physical release utilizing valves/piping; physical penetration of the container; and/or penetration through detonation.
AMLGM	Amalgamation of liquid, elemental mercury contaminated with radioactive materials utilizing inorganic reagents such as copper, zinc, nickel, gold, and sulfur that result in a nonliquid, semi-solid amalgam and thereby reducing potential emissions of elemental mercury vapors to the air.
BIODG	Biodegradation of organics or non-metallic inorganics (i.e., degradable inorganics that contain the elements of phosphorus, nitrogen, and sulfur) in units operated under either aerobic or anaerobic conditions such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the biodegradation of many organic constituents that cannot be directly analyzed in wastewater residues).
CARBN	Carbon adsorption (granulated or powdered) of non-metallic inorganics, organo-metallics, and/or organic constituents, operated such that a surrogate compound or indicator parameter has not undergone breakthrough (e.g., Total Organic Carbon can often be used as an indicator parameter for the adsorption of many organic constituents that cannot be directly analyzed in wastewater residues). Breakthrough occurs when the carbon has become saturated with the constituent (or indicator parameter) and substantial change in adsorption rate associated with that constituent occurs.
CHOXD	Chemical or electrolytic oxidation utilizing the following oxidation reagents (or waste reagents) or combinations or reagents: (1) Hypochlorite (e.g. bleach); (2) chlorine; (3) chlorine dioxide; (4) ozone or UV (ultraviolet light) assisted ozone; (5) peroxides; (6) persulfates; (7) perchlorates; (8) permanganates; and/or (9) other oxidizing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues). Chemical oxidation specifically includes what is commonly referred to as alkaline chlorination.
CHRED	Chemical reduction utilizing the following reducing reagents (or waste reagents) or combinations of reagents: (1) Sulfur dioxide; (2) sodium, potassium, or alkali salts of sulfites, bisulfites, metabisulfites, and polyethylene glycols (e.g., NaPEG and KPEG); (3) sodium hydrosulfide; (4) ferrous salts; and/or (5) other reducing reagents of equivalent efficiency; performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Halogens can often be used as an indicator parameter for the reduction of many halogenated organic constituents that cannot be directly analyzed in wastewater residues). Chemical reduction is commonly used for the reduction of hexavalent chromium to the trivalent state.
DEACT	Deactivation to remove the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity.
FSUBS	Fuel substitution in units operated in accordance with applicable technical operating requirements.
HLVIT	Vitrification of high level mixed radioactive wastes in units in compliance with all applicable radioactive protection requirements under control of the Nuclear Regulatory Commission.
IMERC	Incineration of wastes containing organics and mercury in units operated in accordance with the technical operating requirements of 40 CFR part 264, subpart O and 40 CFR part 265, subpart O. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
INCIN	Incineration in units operated in accordance with the technical operating requirements of 40 CFR part 264, subpart O and 40 CFR part 265, subpart O.
LLEXT	Liquid-liquid extraction (often referred to as solvent extraction) of organics from liquid wastes into an immiscible solvent for which the hazardous constituents have a greater solvent affinity, resulting in an extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and a raffinate (extracted liquid waste) proportionately low in organics that must undergo further treatment as specified in the standard.
MACRO	Macroencapsulation with surface coating materials such as polymeric organics (e.g. resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 260.10.
NEUTR	Neutralization with the following reagents (or waste reagents) or combinations of reagents: (1) Acids; (2) bases; or (3) water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residuals.
NLDBR	No land disposal based on recycling.
PRECP	Chemical precipitation of metals and other inorganics as insoluble precipitates of oxides, hydroxides, carbonates, sulfides, sulfates, chlorides, flourides, or phosphates. The following reagents (or waste reagents) are typically used alone or in combination: (1) Lime (i.e., containing oxides and/or hydroxides of calcium and/or magnesium; (2) caustic (i.e., sodium and/or potassium hydroxides; (3) soda ash (i.e., sodium carbonate); (4) sodium sulfide; (5) ferric sulfate or ferric chloride; (6) alum; or (7) sodium sulfate. Additional flocculating, coagulation, or similar reagents/processes that enhance sludge dewatering characteristics are not precluded from use.
RBERY	Thermal recovery of Beryllium.
RCGAS	Recovery/reuse of compressed gases including techniques such as reprocessing of the gases for reuse/resale; filtering/adsorption of impurities; remixing for direct reuse of resale; and use of the gas as a fuel source.
RCORR	Recovery of acids or bases utilizing one or more of the following recovery technologies: (1) Distillation (i.e., thermal concentration); (2) ion exchange; (3) resin or solid adsorption; (4) reverse osmosis; and/or (5) incineration for the recovery of acid—Note: this does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RLEAD	Thermal recovery of lead in secondary lead smelters.
RMERC	Retorting or roasting in a thermal processing unit capable of volatilizing mercury and subsequently condensing the volatilized mercury for recovery. The retorting or roasting unit (or facility) must be subject to one or more of the following: (a) A National Emissions Standard for Hazardous Air Pollutants (NESHAP) for mercury; (b) a Best Available Control Technology (BACT) or a Lowest Achievable Emission Rate (LAER) standard for mercury imposed pursuant to a Prevention of Significant Deterioration (PSD) permit; or (c) a state permit that establishes emission limitations (within meaning of Section 302 of the Clean Air Act) for mercury. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
RMETL	Recovery of metals or inorganics utilizing one or more of the following direct physical/removal technologies: (1) Ion exchange; (2) resin or solid (i.e., zeolites) adsorption; (3) reverse osmosis; (4) chelation/solvent extraction; (5) freeze crystalization; (6) ultrafiltration; and/or 6 simple precipitation (i.e., crystalization)—Note: this does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RORGS	Recovery of organics utilizing one or more of the following technologies: (1) Distillation; (2) thin film evaporation; (3) steam stripping; (4) carbon adsorption; (5) critical fluid extraction; (6) liquid-liquid extraction; (7) precipitation/crystallization (including freeze crystallization); or (8) chemical phase separation techniques (i.e., addition of acids, bases, demulsifiers, or similar chemicals); Note: This does not preclude the use of other physical phase separation techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RTHRA	Thermal recovery of metals or inorganics from nonwastewaters in units defined in 40 CFR 260.10, paragraphs (1), (6), (7), (11), and (12), under the definition of "Industrial furnaces".

TABLE 1.—TECHNOLOGY CODES AND DESCRIPTION OF TECHNOLOGY-BASED STANDARDS—Continued

Technology code	Description of technology-based standard
RZINC	Resmelting in for the purpose of recovery of zinc high temperature metal recovery units.
STABL	Stabilization with the following reagents (or waste reagents) or combinations of reagents: (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust)—this does not preclude the addition of reagents (e.g., iron salts, silicates, and clays) designed to enhance the set/cure time and/or compressive strength, or to overall reduce the leachability of the metal or inorganic.
SSTRP	Steam stripping of organics from liquid wastes utilizing direct application of steam to the wastes operated such that liquid and vapor flow rates, as well as, temperature and pressure ranges have been optimized, monitored, and maintained. These operating parameters are dependent upon the design parameters of the unit such as, the number of separation stages and the internal column design. Thus, resulting in a condensed extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and an extracted wastewater that must undergo further treatment as specified in the standard.
WETOX	Wet air oxidation performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues).
WTRRX	Controlled reaction with water for highly reactive inorganic or organic chemicals with precautionary controls for protection of workers from potential violent reactions as well as precautionary controls for potential emissions of toxic/ignitable levels of gases released during the reaction.

NOTE 1: When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in § 268.42, Table 2 by indicating the five letter technology code that must be applied first, then the designation "fb." (an abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

NOTE 2: When more than one technology (or treatment train) are specified as *alternative* treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "OR". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
D001		Ignitable Liquids based on 261.21(a)(1)—Wastewaters.	NA	DEACT	NA.
D001		Ignitable Liquids based on 261.21(a)(1)—Low TOC Ignitable Liquids Subcategory—Less than 10% total organic carbon.	NA	NA	DEACT.
D001		Ignitable Liquids based on 261.21(a)(1)—High TOC Ignitable Liquids Subcategory—Greater than or equal to 10% total organic carbon.	NA	NA	FSUBS; RORGS; or INCIN.
D001		Ignitable compressed gases based on 261.21(a)(3).	NA	NA	DEACT**.
D001		Ignitable reactives 261.21(a)(2)	NA	NA	DEACT.
D001		Oxidizers based on 261.21(a)(4)	NA	DEACT	DEACT.
D002		Acid subcategory based on 261.22(a)(1)	NA	DEACT	DEACT.
D002		Alkaline subcategory based on 261.22(a)(1)	NA	DEACT	DEACT.
D002		Other corrosives based on 261.22(a)(2)	NA	DEACT	DEACT.
D003		Reactive sulfides based on 261.23(a)(5)	NA	DEACT	DEACT.
D003		Explosives based on 261.23(a) (6), (7), and (8)	NA	DEACT	DEACT.
D003		Water reactives based on 261.23(a) (2), (3), and (4).	NA	NA	DEACT.
D003		Other reactives based on 261.23(a)(1)	NA	DEACT	DEACT.
D006		Cadmium containing batteries	7440-43-9	NA	RTHRM.
D008		Lead acid batteries (Note: This standard only applies to lead acid batteries that are identified as RCRA hazardous wastes and that are not excluded elsewhere from regulation under the land disposal restrictions of 40 CFR 268 or exempted under other EPA regulations (see 40 CFR 266.80).).	7439-92-1	NA	RLEAD.
D009	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—contains mercury and organics (and are not incinerator residues)).	7439-97-6	NA	IMERC; or RMERC.
D009	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—inorganics (including incinerator residues and residues from RMERC)).	7439-97-6	NA	RMERC.
D012	Table CCW in 268.43.	Endrin	72-20-8	BIODG; or INCIN	NA.
D013	Table CCW in 268.43.	Lindane	58-89-9	CARBN; or INCIN	NA.
D014	Table CCW in 268.43.	Methoxychlor	72-43-5	WETOX; or INCIN	NA.
D015	Table CCW in 268.43.	Toxaphene	8001-35-1	BIODG; or INCIN	NA.
D016	Table CCW in 268.43.	2,4-D	94-75-7	CHOXD; BIODG; or INCIN	NA.
D017	Table CCW in 268.43.	2,4,5-TP	93-72-1	CHOXD; or INCIN	NA.
F005	Table CCWE in 268.41 and Table CCW in 268.43.	2-Nitropropane	79-46-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
F005	Table CCWE in 268.41 and Table CCW in 268.43.	2-Ethoxyethanol	110-80-5	BIODG; or INCIN	INCIN.
F024	Table CCWE in 268.41 and Table CCW in 268.43.		NA	INCIN	INCIN.
K025		Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	NA	LLEXT fb SSTRP fb CARBN; or INCIN	INCIN.
K026		Stripping still tails from the production of methyl ethyl pyridines.	NA	INCIN	INCIN.
K027		Centrifuge and distillation residues from toluene diisocyanate production.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K039		Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K044		Wastewater treatment sludges from the manufacturing and processing of explosives.	NA	DEACT	DEACT.
K045		Spent carbon from the treatment of wastewater containing explosives.	NA	DEACT	DEACT.
K047		Pink/red water from TNT operations	NA	DEACT	DEACT.
K061	Table CCW in 268.43.	Emission control dust/sludge from the primary production of steel in electric furnaces (High Zinc Subcategory—greater than or equal to 15% total Zinc).	NA	NA	NLDBR.
K069	Table CCWE in 268.41 and Table CCW in 268.43.	Emission control dust/sludge from secondary lead smelting: Non-Calcium Sulfate Subcategory.	NA	NA	RLEAD.
K106	Table CCWE in 268.41 and Table CCW in 268.43.	Wastewater treatment sludge from the mercury cell process in chlorine production (High Mercury Subcategory-greater than or equal to 260 mg/kg total mercury).	NA	NA	RMERC.
K113		Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K114		Vicinals from the purification of toluenediame in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K115		Heavy ends from the purification of toluenediame in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K116		Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	NA	CARBN; or INCIN	FSUBS; or INCIN.
P001		Warfarin (>0.3%)	81-81-2	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P002		1-Acetyl-2-thiourea	591-08-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P003		Acrolein	107-02-8	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P005		Allyl alcohol	107-18-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P006		Aluminum phosphide	20859-73-8	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
P007		5-Aminoethyl 3-isoxazolol	2763-96-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P008		4-Aminopyridine	504-24-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P009		Ammonium picrate	131-74-8	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P014		Thiophenol (Benzene thiol)	108-98-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P015		Beryllium dust	7440-41-7	NA	RMETL; or RTHRM.
P016		Bis(chloromethyl)ether	542-88-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P017		Bromoacetone	598-31-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P018		Brucine	357-57-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P022	Table CCW in 268.43.	Carbon disulfide	75-15-0	NA	INCIN.
P023		Chloroacetaldehyde	107-20-0	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P026		1-(o-Chlorophenyl) thiourea	5344-82-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P027		3-Chloropropionitrile	542-76-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P028		Benzyl chloride	100-44-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

§ 268.41, § 268.43, and Table 2 of this section.

12. Section 268.43 is amended by revising paragraph (a) and Table CCW—Constituent Concentrations in Wastes, and by adding paragraph (c) to read as follows:

§ 268.43 Treatment standards expressed as waste concentrations.

(a) Table CCW identifies the restricted wastes and the concentrations of their associated hazardous constituents which may not be exceeded by the waste or treatment residual (not an extract of such waste or residual) for the allowable land disposal of such waste or residual. Compliance with these concentrations is required based upon grab samples, unless otherwise noted in the following Table CCW:

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
D003 (Reactive cyanides subcategory—based on 261.23(a)(5)).		Cyanides (Total)	57-12-5	Reserved	# 590
		Cyanides (Amenable)	57-12-5	0.86	30
D004	Table CCWE in 268.41	Arsenic	7440-38-2	5.0	NA
D005	Table CCWE in 268.41	Barium	7440-39-3	100	NA
D006	Table CCWE in 268.41	Cadmium	7440-43-9	1.0	NA
D007	Table CCWE in 268.41	Chromium (Total)	7440-47-32	5.0	NA
D008	Table CCWE in 268.41	Lead	7439-92-1	5.0	NA
D009	Table CCWE in 268.41	Mercury	7439-97-6	0.20	NA
D010	Table CCWE in 268.41	Selenium	7782-49-2	1.0	NA
D011	Table CCWE in 268.41	Silver	7440-22-4	5.0	NA
D012	Table 2 in 268.42	Endrin	720-20-8	NA	0.13
D013	Table 2 in 268.42	Lindane	58-89-9	NA	0.066
D014	Table 2 in 268.42	Methoxychlor	72.43-5	NA	0.18
D015	Table 2 in 268.42	Toxaphene	8001-35-1	NA	1.3
D016	Table 2 in 268.42	2,4-D	94-75-7	NA	10.0
D017	Table 2 in 268.42	2,4,5-TP Silvex	93-76-5	NA	7.9
F001–F005 spent solvents	Table CCWE in 268.41 and Table 2 in 268.42.	1,1,2-Trichloroethane	71-55-6	0.030	* 7.6
		Benzene	71-43-2	0.070	* 2.7
F001–F005 spent solvents (Pharmaceutical industry wastewater subcategory).		Methylene chloride	75-09-2	0.44	NA
F006	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.2	590
		Cyanides (Amenable)	57-12-5	0.86	30
		Cadmium	7440-43-9	1.6	NA
		Chromium	7440-47-32	0.32	NA
		Lead	7439-92-1	0.040	NA
		Nickel	7440-02-0	0.44	NA
F007	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	590
		Cyanides (Amenable)	57-12-5	0.1	30
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F008	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	590
		Cyanides (Amenable)	57-12-5	0.1	30
		Chromium	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F009	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	590
		Cyanides (Amenable)	57-12-5	0.1	30
		Chromium	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F010		Cyanides (Total)	57-12-5	1.9	1.5
		Cyanides (Amenable)	57-12-5	0.1	NA
F011	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	110
		Cyanides (Amenable)	57-12-5	0.1	9.1
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F012	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	110
		Cyanides (Amenable)	57-12-5	0.1	9.1
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F019	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.2	* 590
		Cyanides (Amenable)	57-12-5	0.86	* 30
		Chromium (Total)	7440-47-32	0.32	NA
F024	Table CCWE in 268.41 and Table 2 in 268.42 (Note: F024 organic standards must be treated via incineration (INCIN)).	2-Chloro-1,3-butadiene	126-99-8	* 0.28	* 0.28
		3-Chloropropene	107-05-1	* 0.28	* 0.28
		1,1-Dichloroethane	75-34-3	* 0.014	* 0.014
		1,2-Dichloroethane	107-06-2	* 0.014	* 0.014
		1,2-Dichloropropane	78-87-5	* 0.014	* 0.014
		cis-1,3-Dichloropropene	10061-01-5	* 0.014	* 0.014
		trans-1,3-Dichloropropene	10061-02-6	* 0.014	* 0.014

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		p-Cresol	106-44-5	[a] 0.011	[a] 6.2
		2,4-Dimethylphenol	105-67-9	[a] 0.033	[a] NA
		Ethylbenzene	100-41-4	[a] 0.011	[a] 14
		Naphthalene	91-20-3	[a] 0.033	[a] 42
		Phenanthrene	85-01-8	[a] 0.039	[a] 34
		Phenol	108-95-2	[a] 0.047	[a] 3.6
		Toluene	108-88-3	[a] 0.011	[a] 14
		Xylenes		[a] 0.011	[a] 22
		Cyanides (Total)	57-12-5	[a] 0.028	[a] 1.8
		Chromium (Total)	7440-47-32	0.2	NA
		Lead	7439-92-1	0.037	NA
K06C		Benzene	71-43-2	[a,e] 0.17	[a] 0.071
		Benzo(a)pyrene	50-32-8	[a,e] 0.035	[a] 3.5
		Naphthalene	91-20-3	[a,e] 0.028	[a] 3.4
		Phenol	108-95-2	[a,e] 0.042	[a] 3.4
		Cyanides (Total)	57-12-5	1.9	1.2
K051	Table CCWE in 268.41 and Table 2 in 268.42.	Cadmium	7440-43-9	1.61	NA
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.51	NA
		Nickel	7440-02-0	0.44	NA
K062	Table CCWE in 268.41	Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
K069	Table CCWE in 268.41 and Table 2 in 268.42.	Cadmium	7440-43-9	1.6	NA
		Lead	7439-92-1	0.51	NA
K071	Table CCWE in 268.41	Mercury	7439-97-6	0.030	NA
K073		Carbon tetrachloride	56-23-5	[a] 0.057	[a] 6.2
		Chloroform	67-66-3	[a] 0.046	[a] 6.2
		Hexachloroethane	67-72-1	[a] 0.055	[a] 30
		Tetrachloroethene	127-16-4	[a] 0.056	[a] 6.2
		1,1,1-Trichloroethane	71-55-6	[a] 0.054	[a] 6.2
K083	Table CCWE in 268.41	Benzene	71-43-2	[a] 0.14	[a] 6.6
		Aniline	62-53-3	[a] 0.81	[a] 14
		Diphenylamine	22-39-4	[a] 0.52	NA
		Diphenylnitrosamine	86-30-6	[a] 0.40	NA
		Sum of Diphenylamine and Diphenylnitrosamine.		NA	[a] 14
		Nitrobenzene	98-95-3	[a] 0.068	[a] 14
		Phenol	108-95-2	0.039	[a] 5.6
		Cyclohexanone	108-94-1	0.36	[a] 30
K084		Nickel	7440-02-0	0.47	NA
K085		Arsenic	7440-38-2	0.79	NA
		Benzene	71-43-2	[a] 0.14	[a] 4.4
		Chlorobenzene	108-90-7	[a] 0.057	[a] 4.4
		o-Dichlorobenzene	95-50-1	[a] 0.088	[a] 4.4
		m-Dichlorobenzene	541-73-1	[a] 0.036	[a] 4.4
		p-Dichlorobenzene	106-46-7	[a] 0.090	[a] 4.4
		1,2,4-Trichlorobenzene	120-82-1	[a] 0.055	[a] 4.4
		1,2,4,5-Tetrachlorobenzene	95-94-3	[a] 0.055	[a] 4.4
		Pentachlorobenzene	608-93-5	0.055	[a] 4.4
		Hexachlorobenzene	118-74-1	[a] 0.055	[a] 4.4
		Aroclor 1016	12674-1, 2	[a] 0.013	[a] 0.92
		Aroclor 1221	11104-28-2	[a] 0.014	[a] 0.92
		Aroclor 1232	11141-16-5	[a] 0.013	[a] 0.92
		Aroclor 1242	53469-21-9	[a] 0.017	[a] 0.92
		Aroclor 1248	12672-29-6	[a] 0.013	[a] 0.92
		Aroclor 1254	11097-69-1	[a] 0.014	[a] 1.8
		Aroclor 1260	11096-82-5	[a] 0.014	[a] 1.8
K086	Table CCWE in 268.41	Acetone	67-64-1	0.28	[a] 160
		Acetophenone	96-86-2	0.010	[a] 9.7
		Bis(2-ethylhexyl)phthalate	117-81-7	[a] 0.28	[a] 28
		n-Butyl alcohol	71-36-3	5.6	[a] 2.6
		Butylbenzylphthalate	85-68-7	[a] 0.017	[a] 7.9
		cyclohexanone	108-94-1	0.36	NA
		1,2-Dichlorobenzene	95-50-1	0.088	[a] 6.2
		Diethyl phthalate	84-66-2	[a] 0.20	[a] 28
		Dimethyl phthalate	131-11-3	[a] 0.047	[a] 28
		Di-n-butyl phthalate	84-74-2	[a] 0.057	[a] 28
		Di-n-octyl phthalate	117-84-0	[a] 0.017	[a] 28
		Ethyl acetate	141-78-6	[a] 0.34	[a] 33
		Ethylbenzene	100-41-4	[a] 0.057	[a] 6.0
		Methanol	67-56-1	[a] 5.6	NA
		Methyl isobutyl ketone	108-10-1	0.14	[a] 33
		Methyl ethyl ketone	78-93-3	0.28	[a] 36
		Methylene chloride	75-09-2	[a] 0.089	[a] 33

METHOD EF 2001

PREPARATION OF TCLP EXTRACT
(Toxicity Characteristic Leaching Procedure)

1.0 SCOPE AND APPLICATION

1.1 This TCLP is designed to determine the mobility of inorganic contaminants in liquid,solid and multiphasic wastes as a preparatory step for subsequent analysis.

1.2 If analysis shows that individual contaminants are not present, or are at such low concentrations that the appropriate thresholds could not possibly be exceeded then the TCLP need not be run.

1.3 If analysis indicates that a regulated compound is present at such a high level that even after accounting for dilution by other fractions the concentration would be above the regulatory threshold, then the waste is hazardous and it is not necessary to perform any additional analyses.

2.0 SUMMARY OF METHOD

2.1 The sample is defined as a liquid waste if it contains less than 0.5 percent dry solids; after filtration through a 0.6 - 0.8 micron glass fiber filter it is the TCLP extract.

2.2 If the solid material in the sample is equal to or greater than 0.5 percent it is seperated from the liquid phase and reduced in particle size if necessary. The solid phase is extracted with 20 times its weight of an extraction fluid which has been determined by the alkalinity of the sample and filtered.

2.3 If compatible, the initial liquid phase of the sample and the extract are combined for analysis. If the liquids are incompatible (i.e. form multiple phases when combined) they are analyzed seperately and the reults combined mathematically to yield a volume-weighted average concentration.

3.0 INTERFERENCES

3.1 See individual analytical methods.

4.0 APPARATUS AND MATERIALS

4.1 Agitation apparatus: Capable of rotating extraction vessel end-over-end at a rate of 30 + 2 rpm.

4.2 Bottle Extraction Vessel. Borosilicate glass

(Pyrex), HDPE, Polypropylene or polyvinyl chloride.

4.3 Filter Holder: Nucleopore Model 410400 or equivalent.

4.3.1 Filters: Borosilicate glass, Whatman GF/F or equivalent; diameter to match Filter Holder.

4.3 pH Meter. Accurate to 0.05 pH units.

4.4 Pan Balance. Mettler PM 600 or equivalent.

5.0 REAGENTS

5.1 Reagent Water.Unless othervise specified DI water is satisfactory.

5.2 Hydrochloric acid (1N). Dilute 82.5 ml ACS Reagent Grade HCl to 1 l with DI water.

5.3 Nitric acid (1N). Dilute 63.0 ml ACS Reagent Grade HNO_3 to 1 l with DI water.

5.4 Sodium hydroxide (1N). Dissolve 40.0 gm NaOH ACS Reagent Grade Pellets in DI water and dilute to 1 l.

5.5 Glacial acetic acid. HOAc, ACS Reagent Grade.

5.6 Extraction Fluids.

5.6.1 Extraction Fluid #1. Add 5.7 ml glacial HOAc to 500 ml DI water; add 64.3 ml 1N NaOH and dilute to 1l. The pH should be 4.93 + 0.05.

5.6.2 Extraction Fluid #2. Dilute 5.7 ml glacial HOAc to 1l with DI water. The pH should be 2.88 + 0.05.

5.7 Analytical Standards as required by individual methods.

6.0 SAMPLE COLLECTION, PRESERVATION AND HANDLING

6.1 Samples shall be collected using a sampling plan appropriate to the material being tested.

6.2 No preservatives may be added to samples.

6.3 Samples may be refrigerated unless irreversible physical change might take place.

6.4 TCLP extracts must be analyzed as soon as possible after extraction.

6.5 Extracts for metals analysis must be acidified

with nitric acid to a pH<2. If precipitation occurs the sample may be analyzed without pH adjustment.

7.0 PRELIMINARY EVALUATIONS

Preliminary tests are performed to determine the percent solids, whether or not the sample may serve as its own TCLP extract after filtration and the proper choice of extraction fluid.

7.1 Determine the percent solids by weighing a portion of sample into a tared container and transferring to the filter assembly, using a tared suction flask. Apply vacuum until air passes freely through the filter cake.

7.1.1 Determine the weight of the liquid phase by subtracting the weight of the suction flask from the weight of the filtrate filled flask. Determine the weight of the solid phase by subtracting the weight of the liquid phase from the weight of the original sample and calculate the percent solids.

7.1.2 Dry the filter and solid phase at 100 + 20°C and calculate the Percent Dry Solids:

7.2 Percent Dry Solids < 0.5%. The liquid portion after filtration is considered the TCLP Extract.

7.3 Determination of Proper Extraction Fluid.

7.3.1 Weigh a 5.0 gm subsample of the material into a 250 ml beaker.

7.3.2 Add 96.5 ml DI water and a magnetic stirring bar.

7.3.3 Stir vigorously for 5 minutes and determine pH.

7.3.4 If the pH is less than 5.0 use Extraction Fluid #1 for performing the TCLP extraction.

7.3.5 If the pH is greater than 5.0 add 3.5 ml 1N HCl, mix, heat to 50°C and hold for 10 minutes.

7.3.6 Cool to room temperature and determine the pH.

7.3.7 If the pH is less than 5.0 use Extraction Fluid #1; if the pH is greater than 5.0 use Extraction Fluid #2 for performing the TCLP Extraction.

8.0 EXTRACTION PROCEDURE

8.1 Transfer 100 gm of the sample (corrected to the dry weight basis) to the Extraction Vessel.

8.2 Add 2000 ml of the appropriate Extraction Fluid.

8.3 Seal the Extraction Vessel if necesary and start the rotary apparatus.

8.4 Rotate the sample for 18 + 2 hours.

NOTE: Some samples may evolve gases such as CO_2; to relieve the pressure, the apparatus may be periodically stopped and the bottle opened and vented.

8.5 Following the extraction period filter the slurry using the vacuum filtration apparatus and a Whatman GF/F filter. If necessary the filter may be replaced as needed to speed up the process.

9.0 PREPARATION OF THE TCLP EXTRACT

9.1 If the original sample was solid and contained no liquid phase, the filtrate obtained in 8.5 is defined as the TCLP Extract.

9.2 If the original sample was a slurry and had been filtered during determination of the Percent Solids and the filtrate from 8.5 are compatible, the two solutions may be combined and then defined as the TCLP Extract.

9.3 If the two liquid phases are incompatible they shall be analyzed seperately and the results combined mathematically.

9.4 After the TCLP Extract has been collected, the aliquot for metals analysis shall be acidified to pH < 2 All other aliquots must be refrigerated below 4°C until analyzed.

9.5 TCLP Extracts to be analyzed for metals shall be acid digested prior to analysis. "Data on undigested extracts alone cannot be used to demonstrate that the waste is not hazardous."

10.0 QUALITY CONTROL

10.1 Retain all data and keep available for reference or inspection for a minimum period of three (3) years.

10.2 At least one blank shall be run for every 10 extractions in an extraction vessel to determine if any

memory effects are ocurring.

10.3 A matrix spike shall be performed for each waste unless the result exceeds the regulatory level and the data is being used for that purpose. If more than one sample of the same waste is being analyzed a matrix spike shall be performed for every twenty samples and the average percent recovery applied to the results.

10.3.1 Matrix spikes are to be added after filtration and before preservation to the TCLP Extracts.

10.3.2 Matrix spike levels shall be made at the appropriate regulatory threshold limits.

10.3.3 The purpose of the matrix spike is to monitor the adequacy of the analytical methods and whether matrix interferences exist. If matrix spike recoveries are less than 50%, then the analytical methods are not performing correctly, and the method of standard additions shall be used.

10.3.4 When the contaminant is within 20% of the regulatory level the method of standard additions shall be employed.

10.3.5 The Method of Standard Additions requires preparing calibration standards in the sample matrix rather than in DI Water or a blank solution. Four identical aliquots are taken; known amounts of standard are added to three of them and the fourth is the unknown.

10.3.5.1 The first aliquot should contain approximately 50% of the expected concentration, the second should contain apporximately 100% and the third should contain about 150% of the expected concentration.

10.3.5.2 All four aliquots are maintained at the same final volume by adding DI Water and may require dilution to stay within the instrument's linear range.

10.3.5.3 Prepare a plot or subject data to linear regression of instrumental signals or externally derived concentrations.

11.0 METHOD PERFORMANCE

11.1 Not applicable.

12.0 REFERENCES

12.1 Federal Register/Vol 55, No. 61/Thursday, March 29,1990/Rules and Regulations 11863 et seq. [40 CFR part 261, Appendix II-Method 1311 Toxicity Characteristic Leaching Procedure (TCLP)].

ETICAM, INC.

FERNLEY, NEVADA

HAZARDOUS WASTE TREATMENT FACILITY

CONTINGENCY PLAN

Revision #2

February 22, 1990

CONTINGENCY PLAN

Table of Contents

LIST OF FIGURES - SECTION 10

HAZARDOUS WASTE CONTINGENCY PLAN AND DESCRIPTION OF PROVISIONS FOR PREPAREDNESS FOR AND PREVENTION OF EMERGENCIES

ETICAM
FERNLEY, NEVADA

1.0 PURPOSE

In accordance with Title 40 of the Code of Federal Regulations 264 Subpart D, the following plan will be used in the event of an emergency involving hazardous materials and wastes at ETICAM.

The purpose of this plan is four-fold:

1) EMERGENCY GUIDANCE:
To act as a guide during actual emergency situations;

2) HAZARD MINIMIZATION:
To minimize hazards to human health and the environment from fires, explosions, or any release of hazardous and industrial wastes stored on-site to the facility structures, or to the air or soil;

3) MUTUAL AID:
To familiarize local emergency response personnel (i.e., sheriff, fire, and rescue departments, hospital and government personnel) with the types of materials handled and internal emergency response procedures.

4) TRAINING:
To act as a training guide for employees to familiarize them in proper procedures to implement during an actual emergency situation.

The provisions of this plan will be carried out immediately whenever there is a fire, explosion, or release of hazardous materials or waste or other upset condition which could threaten human health or the environment.

In addition, this plan is intended to describe the actions facility personnel must take to minimize hazards to human health or the environment in the event of fires, explosions, or any unplanned sudden, accidental release of hazardous materials or wastes.

1.1 LOCATION OF PLAN

Several copies of this plan are maintained at ETICAM at all times for use during an emergency. In addition, a copy has been submitted to the following agencies:

Lyon County Sheriff

Fernley Fire Department

Lyon County Emergency Management Director

Great Basin Health Center

Nevada Division of Environmental Protection (NDEP).

2.0 GENERAL FACILITY DESCRIPTION

ETICAM is located at 2095 Newlands Drive East, Fernley, Nevada. ETICAM is a hazardous waste storage and treatment facility engaged in the following generalized functions:

- Acceptance of hazardous and non-hazardous industrial waste from various generating industries.
- Acceptance of metal containing wastes for reclamation.
- Storage of hazardous materials and waste in tanks and containers.
- Treatment of aqueous liquid hazardous and non-hazardous industrial waste in tanks and filters, and other recovery equipment.

The general categories of hazardous waste accepted, stored and treated at ETICAM and the handling method for each is described in Table 1. Refer to Section 6.0 for a description of the hazards of each category of material handled by ETICAM.

TABLE 1
GENERAL WASTE CATEGORIES

WASTE CATEGORY	EPA WASTE CODE*	EPA PROCESS CODE*
1) Metal Containing Sludges	F006, F008, D006, D006, D007, D008, D011	S01, S02, T01, T04
2) Cyanide Bearing solutions; plating & stripping baths, etc.	F007, F009, D003 D003	S01, S02, T01
3) Other corrosives; acids, alkalis, plating & stripping solutions (noncyanide)	D002	S01, S02 T01

*CODE DEFINITIONS:

D002 - Corrosive (acid or alkaline)

D003 - Reactive (cyanide or sulfide)

D006 - Contains Cadmium

D007 - Contains Chromium

D008 - Contains Lead

D011 - Contains Silver

F006 - Wastewater treatment sludges from electroplating operations.

F019 - Wastewater treatment sludges from the chemical conversion coating of aluminum.

F007 - Spent cyanide plating bath solutions from electroplating operations.

F008 - Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.

F009 - Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.

F011 - Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.

F012 - Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.

(TELEPHONE POST LIST)

FACILITY PERSONNEL

EMERGENCY COORDINATOR

Byron B. Bradd
General Manager-EXT. 115
746-0774 or pager: 887-8418
1760 Quail Run Road
Reno, Nevada 89523

ALTERNATE COORDINATORS

Tom Medeiros
Operations Manager-Ext. 103
575-6061 or pager 887-8389
975 Winnie Lane
Fernley, Nevada 89408

John Reeder
Maintenance Foreman-Ext. 108
575-2323 or pager 887-8419
35 Arrow
Fernley, Nevada 89408

Dave Brown
Operations Foreman-Ext. 103
575-2744 or pager 887-8419
135 E. Main
Fernley, Nevada 89408

Jim Bosley
Plant Engineer-Ext. 116
423-5034
303 York Lane
Fallon, Nevada 89408

LABORATORY

Budd Rude
Lab Manager-Ext. 104
575-5651
1250 Newlands Dr. #1
Fernley, Nevada 89408

REGULATORY COORDINATOR

Ken Tyler
Regulatory Coordinator-Ext. 116
786-8813
290 Talus Way
Reno, Nevada 89503

OFFICE

Debbie Currier
Office Manager-Ext. 102
575-6077
145 Granada
Fernley, Nevada 89408

PAGING SYSTEM

Plant only dial = *** 6**

Entire facility dial = *** 0**

(TELEPHONE POST LIST)

EMERGENCY SERVICES

FIRE:
Fernley Vol. Fire Dept.
575-2321
31 S. Main Street
Fernley, Nv. 89408

POLICE:
Lyon County Sheriff
575-2321 Dispatch
575-2525 Sub Station
925 Main Street
Fernley, Nv. 89408

MEDICAL:
Great Basin Health Clinic
575-2299
1320 Newlands Dr.
Fernley, Nv. 89408

POISON CONTROL:
Washoe Poison Control
785-4129
77 Pringle Way
Reno, Nv. 89502

STATE POLICE:
Nevada Highway Patrol
Dial 0 ask for Zenith 1200
555 Wright Way
Carson City, Nv. 89701

DANGER OUTSIDE FACILITY:
National Response Center
1-800-424-8802

NEVADA SYSTEMS ALERT:
Fire & Burglary
322-3461
670 S. Rock Blvd.
Reno, Nv. 89520

NDEP - AND - EPA:
Nev. Division of
Environmental Protection
201 S. Fall St. Capitol Complex
Carson City, Nv. 89701
WATER SPILLS: Day 687-4240
Night 687-5300
AIR RELEASES: Day 687-5065
Night 687-5300
HAZARDOUS WASTE: Day 687-5872

SPILL CLEAN-UP:
Disposal Control Services Inc.
884 Freeport
Sparks, Nv. 89431
(702) 331-9400
(800) 654-5636 (Nevada Only)

American Environmental
Management Corp.
(916) 985-6666
11855 White Rock Rd.
Rancho Cordova, Ca. 95670

CHEMICAL INFORMATION:
Chemtrec
Chemical Transportation
Emergency Center
1-800-424-9300
Washington, D.C.

ACCIDENTAL RELEASES TO THE ENVIRONMENT:
Emergency Management Director
882-9159
18 Highway 95A North
Yerington, Nv. 89447

Revised February 22, 1990

3.0 EMERGENCY RESPONSE CHAIN OF COMMAND

The first step in responding to a spill, fire or explosion involving hazardous waste is an established, well-structured chain of command of trained, experienced personnel. Such a chain command has been established at ETICAM and is described in this Section.

At all times, there will be at least one person, either on the facility premises or on call, who will be responsible for coordinating all emergency response measures. This person will be called the Emergency Coordinator, and will have full authority to commit all resources needed to carry out the measures provided in this plan.

In case of an imminent or actual emergency a the facility, the Emergency Coordinator, or his alternate, shall be contacted immediately. Each Emergency Coordinator is thoroughly familiar with this contingency plan, all operations and activities at the facility, the location and characteristics of the materials and wastes handled, the location of all facility records, the facility layout, and the location of all emergency response and spill clean up equipment.

3.1 DESIGNATED EMERGENCY COORDINATORS

- Primary Emergency Coordinator

Byron B. Bradd, P.E.
1760 Quail Run Road
Reno, Nevada 89523
(702) 575-2760 Pager (702) 887-8418
Home: (702) 746-0774

- Alternate Emergency Coordinators

Tom Medeiros
313 Shadow Lane
Fernley, Nv. 89408
(702) 575-2760
Home: (702) 575-2419
Pager: (702) 887-8389

John Reeder
35 Arrow St.
Fernley, Nv. 89408
(702) 575-2760
Home: (702) 575-2323
Pager: (702) 887-8419

Dave Brown
135 E. Main
Fernley, Nv. 89408
(702) 575-2760
Home: (702) 575-2744
Pager: (702) 887-8419

Jim Bosley
303 York Lane
Fallon, Nv. 89406
(702) 575-2760
Home: (702) 423-5034

3.2 EMERGENCY COORDINATOR'S RESPONSIBILITIES

3.2.1 Immediate Action:

In the event of an emergency, the Emergency Coordinator must immediately:

1) Activate internal facility alarms or communication systems to notify all facility personnel.

2) Ensure that all personnel are accounted for for and isolated from danger.

3) Arrange for emergency services for any injured personnel.

4) Notify state or local emergency response teams if their help is needed.

5) Decide whether an evacuation of the facility and/or surrounding areas is necessary.

3.2.2 Identification and Assessment:

Either through direct observation, review of operating records, manifests, waste analysis reports or chemical analyses, the Emergency Coordinator will identify the character, exact source, amount, and extent of released materials.

The Emergency coordinator must also assess the possible hazards to human health or the environment that may result from any release, fire, or explosion (e.g. the effects of any toxic, irritating, or asphyxiating gases that are generated) or the effects of any hazardous surface water run off from water or chemical agents used to control fire. He must consider both direct and indirect effects of any release, fire or explosion. The Emergency Coordinator shall use his best professional judgment for the assessment of possible hazards.

3.2.3 Danger Outside Facility

If the emergency threatens human health and/or the environment outside the facility, the Emergency Coordinator must:

- Notify local authorities if evacuation of local areas is advisable.
- Immediately notify the Nevada DEP.
- Immediately notify the National Response Center at 800-424-8802 and report:
  a. Name and telephone number of reporter
  b. Name and address of facility
  c. Time and type of incident (e.g. release, fire)
  d. Name and quantity of material(s) involved
  e. The extent of injuries
  f. The possible hazards to human health or the environment outside the facility

In assessing whether the evacuation of local areas is necessary, the Emergency Coordinator will assess:

- Prevailing wind conditions
- Potential for migration outside the facility
- Possibility of explosion

3.2.4 During An Emergency:

The Emergency Coordinator will take any and all measures he/she deems necessary (e.g. stop operations, isolate containers, etc.) to ensure that fires, explosions or releases do not occur, reoccur or spread to other hazardous waste areas of the facility.

If the facility stops operations, the Emergency Coordinator will monitor for leaks, pressure buildups, gas generation, or ruptures in pipes, valves, or other equipment.

3.2.5 After An Emergency:

After an emergency, the Emergency Coordinator will:

- Supervise cleanup efforts, and ensure that the recovered waste, or contaminated material is properly treated, stored, or disposed of.
- Ensure that no waste that my be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed.
- Make sure emergency and spill cleanup equipment is back in order before operations resume.
- Inspect all emergency equipment listed in the contingency plan and certify that said equipment is cleaned and fit for it's intended use before operations are resumed. See Emergency Equipment Inspection Form T.

3.3 PHONE NUMBERS OF EMERGENCY SERVICES

The following are addresses and phone numbers of local, state, and national emergency response teams, and government agencies. Copies of these addresses and numbers will be kept posted at the phones located in each of the facility's departments.

3.3.1 Primary Emergency Responses Services:

Police:	Lyon County Sheriff
Location:	925 Hwy. 40E Fernley, Nevada 89408
Phone:	(702) 575-2321
Fire:	Fernley Vol. Fire Dept.
Location:	31 South Main Fernley, Nevada 89408
Phone:	(702) 575-2321
County:	Emergency Management Director
Location:	18 Highway 95A North Yerington, Nevada 89447
Phone:	(702) 882-9159

Hospital:	Great Basin Health Center
Location:	1320 Newlands Drive Fernley, Nevada 89408
Phone:	(702) 575-2299
State Police:	Ask Operator for Zenith 12000
Nevada DEP:	NDEP
Location:	201 South Fall Street Capitol Complex Carson City, Nevada 89710
Phone:	(702) 687-5872 (Business Hours) (702) 687-5300 (Night/Weekends)

3.4 PHONE NUMBERS OF SUPPORT SERVICES

The following are names and phone numbers of various support services which can be called upon to provide assistance in the event of an emergency at the facility:

- Spill Cleanup Contractors
  Disposal Control Service Inc.
  884 Freeport
  Sparks, Nv. 89431
  (702) 331-9400
  (800) 654-5636 (Nevada Only)

  American Environmental Management Corp.
  11885 Whiterock
  Rancho Cordova, CA 95670
  (916) 985-6666

- NV Poison Control Center
  St. Mary's Hospital
  235 W. 6th Street
  Reno, NV 89503
  (702) 789-3013

- US Environmental Protection Agency
  National Response Center
  (800) 424-8802

- Chemtrec
  Chemical Transportation Emergency Center
  Washington, D.C.
  (800) 424-9300 (24 hour number)

4.0 EMERGENCY PROCEDURES

4.1 General

The Emergency Coordinator or his alternate, are responsible for carrying out emergency procedures. In the event of an imminent or actual emergency, the procedures outlined below will be followed:

1. If necessary, the Emergency Coordinator will activate internal facility alarms and/or communication systems to notify all facility personnel and,

2. If their help is needed, the Emergency Coordinator will notify the state and local agencies listed in Section 3.3.

Due to the varying nature of the waste materials handled at the facility (See Table 7.2), various hazards can result from an emergency situation.

There are human exposure hazards associated with large or small spills. Inhalation of vapors from spilled materials (such as cyanide bearing wastes) may be harmful. Some of the wastes are poisons and/or irritants, and may cause skin and eye irritation, and/or burns upon exposure.

By following proper response procedures the potential hazards can be greatly reduced.

4.2 Specific

This plan has been developed and organized in such a way as to afford maximum guidance during an incident of any magnitude. The Emergency Coordinator and personnel employed by ETICAM are thoroughly familiar with this document and will follow prescribed procedures in the event of an emergency.

Should an emergency situation arise, the Emergency Coordinator will be notified immediately. Concurrently, all facility personnel will be notified where required. Sheriff departments, federal, state or local agencies or contractors will be notified if their assistance is required.

4.2.1 Spills - Emergency Procedures

A) General

In the event of a spill, leak or release of any kind, the following general steps will be followed:

1. Notify Emergency Coordinator or Alternate (verbal communication).

2. Determine source of leak or spill; immediately identify the character, exact source, amount and area affected by the release.

3. Eliminate and continue to restrict all sources of ignition from spill area, and areas down-wind of the spill area.

4. Assessment: The Emergency Coordinator will assess possible hazards to human health and the environment by considering both direct and indirect effects of released material.

The Emergency Coordinator shall adhere to the following policies in making his assessment:

1. Fire or Explosion - In the event of any fire or explosion, in any process storage or unloading area, the Emergency Coordinator will notify the local fire authorities immediately.

2. In the event of any gaseous or liquid discharge to the environment, the emergency coordinator will notify the NDEP immediately.

3. The Emergency Coordinator shall seek the advise of his technical personnel as well as local and state authorities in assessing all possible hazards to human health and the environment.

4. Summon Fernley Fire Department, and also summon further aid, (i.e. spill cleanup contractor) if required.

B) Uncontrolled Spills

1. Don boots, appropriate protective clothing, gloves, face shields, goggles, and respirator. Type of respirator (i.e. filter cartridge or self-contained breathing apparatus) will be determined by the type of material involved in incident and prescribed by the Emergency Coordinator.

2. Remedy and stop point source where possible.

3. Dike spill with Standard Industrial Absorbent as required.

4. Once flow is stopped, pump spilled material to empty tank or recovery drums, or absorb spilled material from pavement with Standard Industrial Absorbent. Use shovel to uniformly disperse absorbent over affected area.

5. Collect contaminated material (i.e., absorbent rags, etc.)

6. Decontaminate boots, protective clothing, gloves, and face shields.. Dispose of TYVEK suits into a recovery drum with contaminated absorbent.

7. Cleanup, restore or replace spill response equipment, and return it to it's original location.

8. Physical inspection of all emergency equipment is required as listed in the contingency plan by the Emergency Coordinator to insure that the equipment is cleaned and fit for it's intended use as specified in the Equipment Manufacturer's Operating Procedures. See Emergency Equipment Inspection Form T.

9. Label recovery drums in accordance with all applicable hazardous waste rules and regulations.

10. Observe proper hygiene procedures during decontamination of personnel.

C) CONTROLLED SPILLS

C.1 Spills Within Diked Tank Storage/Treatment Areas

1. Immediately notify Emergency Coordinator. He will determine whether toxic or irritating fumes may be formed.

   a. Emergency Coordinator will prescribe appropriate respiratory protection.

2. Emergency Coordinator will summon outside assistance as required.

3. Contact laboratory personnel to determine which tanks are available and/or compatible with spilled materials.

4. Pump to appropriate storage tank.

   a. All tanks are in bermed containment areas with berms designed to contain 110% of the total volume of all tanks within the berm; escape from the berm is a low probability.

   b. Each berm has a sump with a level alarm. The sumps are designed to allow pump out using portable air or electric operated pumps. There are no drains associated with the sump, thus eliminating underground piping which might leak.

   c. In the event of leak or spill, the spilled material is washed into the sump and pumped to the appropriate storage tanks or reactor at the direction of the Emergency Coordinator in conjunction with lab personnel and outside assistance as required.

   d. The maximum estimated cleanup time required for such an emergency is one hour for up to the first 300 gallons and an additional hour for each additional 1000 gallons. All spills will generally be cleaned up within 24 hours.

5. Clean and repair spill area thoroughly.

   a. The estimated repair time for tanks will vary with the specific flow; however, tanks will not be placed back into service until repaired.

C.2 Spills Within Truck Unloading Area

1. Immediately notify Emergency Coordinator. He will determine whether toxic or irritating fumes may be formed. The possibility of hazardous vapors always exists from a spill of hazardous materials.

   a. Emergency Coordinator will prescribe appropriate respirators.

2. Emergency Coordinator will summon outside assistance, such as a spill cleanup contractor, as required.

3. Determine whether or not the material spilled will remain within the spill control area.

   a. Use absorbent material to contain spill if necessary.

4. Contact laboratory personnel to determine which tanks are available and/or compatible with spilled materials.

5. Pump to appropriate storage tanks.

6. Clean spill area thoroughly.

4.2.2 Fire/Explosion - Emergency Procedures

Depending upon the magnitude of the fire incident and the amount of material involved, the following emergency procedures will be implemented:

A. Small Spill on Fire

1. Call Fire Department.

2. Grab fire extinguisher, if (as it should be) immediately accessible; extinguish flames. If unable to immediately extinguish, sound alarm and leave area. If not extinguished, follow procedures in Section 4.2.2B. for large fires.

3. Notify Emergency Coordinator.

4. Emergency Coordinator will insure that the sprinkler valve located in the Fire Assay Lab is open.

5. Eliminate and continue to restrict all sources of ignition so that the fire will not re-ignite.

6. Wearing boots, protective gloves, and eye protection, stop leak. Absorb spill with absorbent or pump to standby empty recovery drums.

7. Follow spill cleanup procedures described in Section 4.2.1.

B. Large Fire

1. Sound emergency fire alarm using pull box.

2. Office personnel call Fernley Fire Department upon sounding of emergency alarm.

3. Notify Emergency Coordinator (if not already aware of situation).

4. Emergency Coordinator will insure that the sprinkler valve located in the Fire Assay is open.

5. All personnel except those designated by the Emergency Coordinator shall evacuate the building upon sounding of alarm, via nearest exit.

6. In the event of a release of toxic gases or the potential for explosion, off-site evacuation may be advisable.

7. Determine the most accessible and safest route of approach to the fire. Consider flame, migration potential, associated dangers and physical limitations. Attempt to determine nature of burning material using knowledge of tank and container contents.

8. Put on full protective equipment (bunker gear) including self-contained breathing apparatus.

9. When fire department arrives, delegate to them primary responsibility. Stand by for assistance.

10. Cool nearby tanks with water (being careful of any water reactives). See Water Reactive list in Section 6.0.

11. When Fire is extinguished, remedy point source to stop flow if it can be done without risk.

12. Absorb spilled material or pump to available tank or empty containers. Use shovel to spread Standard Industrial Absorbent over affected area.

13. Collect contaminated material (i.e., absorbent, dry chemical, rags, etc.) in recovery drums.

14. Decontaminate boots, gloves, goggles, face shields, self-contained breathing apparatus and other reusable emergency response equipment.

15. Cleanup, restore or replace emergency response equipment, and return it to it's original location.

16. Inspect emergency equipment as specified in Section 4.2.1. See Emergency Equipment Inspection Form T.

17. Label and mark recovery drums in accordance with all applicable hazardous waste rules and regulations.

18. Observe proper hygiene procedures during decontamination of personnel.

4.3 RESUMPTION OF OPERATIONS

Prior to resuming normal operations, the Emergency Coordinator will ensure that all emergency equipment is inspected and returned to operating conditions. See Emergency Equipment Inspection Form T.

The Emergency Coordinator shall take the following precautions for the prevention of incompatible waste from being treated, stored or located in the affected areas:

1. No new waste will be introduced into the effected area until a total cleanup is accomplished.

2. Following the spill cleanup operation, an assessment shall be made as to the proper handling of recovered materials (including material in 55 gallon recovery drums).

a. If the exact source of the leaked or spilled material can be determined, the cleanup residue will be identified accordingly.

b. If the exact source of the leaked or spilled material cannot be determined or if two or more materials have mixed and subsequently been cleaned up, a sample will be collected and analyzed. The analysis will consist of testing for the four characteristics of a hazardous waste.

c. Spill cleanup residues of listed hazardous wastes are automatically considered as the same hazardous waste.

d. Whenever two or more wastes are mixed as the result of a spill, the components will be reviewed to ensure that they are not incompatible with any material with which they might be combined. This will generally consist of a review of each type of waste along with their potential for reaction and emission of toxic gases.

Tests shall be made as necessary to ensure proper handling and disposal of all material.

The Emergency Coordinator or his alternate will inspect all emergency equipment listed in the contingency plan and certify that it is clean and fit for its intended use per the manufacturer's specifications. This inspection will be documented by Form T on the following page.

ETICAM
Fernley, Nv.

Inspection Schedule T
LAB EMERGENCY EQUIPMENT

Month _____
Year _____

Inspector:_____

EQUIPMENT/INVENTORY		DEFICIENCY SPECIFY	CORRECTIVE ACTION DATE INITIATED CORRECTED
Empty Open Head Drums/20			
Industial Absorbent/40			
Cartridges			
Shovels			
TYVEK Suits			
Gloves			
Boots			
Eye Goggles			
Face Shields			
Acid Resistant Suits			
First Aid Equipment			
Hard Hats			
Showers			
Eye Wash Sinks			
Emergency Generator			
Self Contained Breathing Apparatus			
Fire Extinguishiers			

Revised February 22, 1990

ETICAM Inspection Schedule T Month _____

Fernley, Nv. EMERGENCY EQUIPMENT Year _____

Inspector:_____

EQUIPMENT/INVENTORY	IN STOCK	DEFICIENCY (SPECIFY)	CORRECTIVE ACTION DATE INITIATED	CORRECTED
Empty Open Head Drums/20				
50 lb. bag - Industrial Absorbent/40				
Dust Respirator/3 Half Face Respirator/6 Full Face Respirator/2				
R11 Cartridges/16 R24 Cartridges/10 R25 Cartridges/32				
Shovels/5				
TYVEK Suits/12				
Gloves/12				
Boots/12				
Eye Goggles				
Face Shields/5				
Acid Resistant Suits/2				
EMT First Aid Kit/2 Portable Oxygen Resuscitator/1 Stokes Basket or Litter/1				
Hard Hats/6				
Self Contained Breathing Apparatus-SCUBA, Air Packs/3				
20 lb. ABC Fire Extinguishers/12				

Showers			
Eye Wash Sinks			
Emergency Generator			

Revised February 22, 1990

5.0 EVACUATION PLAN

In the event that an incident poses an actual or serious potential threat to human health or safety, the Emergency Coordinator will evacuate the facility, or, at a minimum, the affected area. If the evacuation of outlying areas is deemed necessary, the Emergency Coordinator will advise the local Sheriff and Fire Departments and the Nevada DEP of the potential threat to human health.

Evacuation plan implementation requires prompt and deliberate action. The plan of action described in this section will be strictly adhered to unless, in the opinion of the on-scene Emergency Coordinator, minor modifications during an actual emergency would constitute a better executed evacuation.

5.2 FACILITY EVACUATION

5.2.1 Objective

The objective of the evacuation plan is to minimize health hazards to employees or visitors from imminent or potential hazards associated with a spill or fire.

5.2.2 Evacuation Signal

The facility emergency alarms or paging system (air horn if alarms are inactive) will be used to signal partial or total facility evacuation. Verbal warning by an appointed runner will warn on-site personnel of the nature of the incident.

In the event of total facility evacuation, the Lyon County Sheriff and fire departments will be immediately notified.

5.3.3 Decision to Evacuate

The Emergency Coordinator will make the decision whether or not to evacuate. This decision will be based upon his experience in the field and those criteria identified in the Contingency Plan.

Generally all personnel will immediately evacuate whenever a fire or gas alarm sounds. They will not return to their work place until cleared by the Emergency Coordinator.

5.4.4 Evacuation Procedures

1. The on-scene Emergency Coordinator will direct the evacuation.

2. In each occurrence of an evacuation emergency, it is the responsibility of the top ranking member of the department to take charge of the personnel and property in his department. Follow the instructions given by the runner as closely as possible, using judgment to safeguard life and property. Supervisors who are away from their base work area when an emergency occurs are urged to return to it as quickly as possible to take charge.

3. Operators must move their vehicles so they do not obstruct safety aisles. This will allow emergency vehicles to pass.

4. In all cases where the building is being evacuated, each operator should shut down his/her operations, if possible.

5. All employees, visitors and contractors will leave the facility in an orderly manner, via exits shown in Facility Evacuation Plan in Figure 1 of this plan.

6. The Emergency Coordinator will ensure that all valves are closed, and pumps and motors are off, if possible.

7. Immediately end all telephone conversations.

8. Do not attempt to obtain personal belongings, unless otherwise authorized.

9. Do not run or make unnecessary noise.

10. During the evacuation, the Emergency Coordinator and appointed aides will ensure that all unauthorized personnel be kept from entering the evacuated area.

11. When evacuating the building, all employees will proceed to the assembly area, as shown on the Evacuation Plan see (site Plan C) and muster with their department supervisor. They will remain in the assembly area as far from the building as possible so as not to interfere with emergency personnel and equipment. It is the responsibility of department supervisors to muster their employees in an expeditious manner and report any unaccounted for personnel to the Emergency Coordinator.

    Wind socks are located on the front and rear of the facility so that personnel can maintain an upwind position.

12. The Emergency Coordinator will account for all personnel to ensure that no one has been left behind.

13. The decision to re-enter the facility will be made by the Emergency Coordinator.

14. The Emergency Coordinator will obtain rescue services for injured people where required.

5.3 SURROUNDING AREA EVACUATION

If the emergency situation requires the evacuation of areas surrounding the facility, the Emergency Coordinator will immediately inform the Lyon County Sheriff and Fernley Fire Department, the Nevada DEP and the National Response Center of such a condition. This decision will be based upon:

a. The nature and toxicity of the material involved in the emergency.

b. Prevailing wind direction.

c. Migration potential outside the facility.

d. Possibility of an explosion.

e. Possibility of a pending release of toxic vapors, gases or mists.

5.3.1 Evacuation Signal and Notification

The signal to evacuate surrounding areas will be given directly to the Lyon County Sheriff and Fernley Fire Department.

Under direction of the Sheriff and Fire Departments calls will be placed to facilities immediately surrounding ETICAM, advising them of the nature of the situation and the advisability to evacuate.

The Sheriff and Fire Departments along with appointed ETICAM runners will notify all other personnel (industries, residential, etc.) in the area to be evacuated regarding the nature of the situation and the advisability to evacuate.

In all cases of surrounding area evacuation, all personnel so notified will be directed as to the best roads to use and direction(s) to proceed along, as decided by the Emergency Coordinator in conjunction with the Fernley Sheriff and Fire Departments.

Whenever the Emergency Coordinator determines that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated. In addition, the following agencies must be notified:

a. He must immediately notify Nevada DEP using the emergency spill response number in Section 3.3.1 and provide the same information.

b. He must also notify the National Response Center (using their 24-hour toll free number). The report must include:

   1) Name and telephone number of reporter;

   2) Name and address of facility;

   3) Time and type of incident (e.g., release, fire);

   4) Name and quantity of material(s) involved, to the extent known;

   5) The extent of injuries, if any; and

   6) The possible hazards to human health, or the environment, outside the facility.

5.4 MEDICAL EMERGENCIES

Various medical emergency and first aid equipment is maintained on-site as listed in Section 7.2.5. General response to injuries is as follows:

FIRST AID RESPONSE

- Move victim to fresh air; call emergency medical care (see Section 3.3 for telephone numbers).
- If not breathing, give artificial respiration.
- If breathing is difficult, give oxygen.
- In case of contact with material, immediately flush skin and eyes with running water for at least 15 minutes.
- Remove and isolate contaminated clothing and shoes.
- Administer additional first aid as appropriate.
- Keep victim warm, and await arrival of emergency medical response unit.
- Ensure that a description of the incident and the materials involved accompanies the victim to the hospital. The Material Safety Data Sheet (MSDS) Should be provided for the hazardous material.

See Appendix for MSDS

6.0 CHARACTERISTICS OF HAZARDOUS MATERIALS & WASTES

Table 2 has been assembled to provide immediate information regarding the types of hazards posed by the various categories of materials and wastes stored and treated at ETICAM. This information is, by its nature, general. The expertise of plant personnel, especially the Technical Personnel should be relied upon heavily in any emergency.

TABLE 2

HAZARDOUS WASTE AND VIRGIN CHEMICAL CONTINGENCY DATA

Substance in Storage/ Location	Contingency Data
Concentrated Acid & Wastes (Commonly Plating or Stripping Solutions) Tank Storage	Life Hazard: Extremely toxic Do Not Handle with bare hands. Can cause severe deep burns; avoid contact. Breathing of concentrated mists can damage upper respiratory tract and lung tissue. Personnel Protection: Wear full protective clothing (acid resistant) including safety goggles. Upon any contact with skin or eyes, the material should be washed off immediately. Remove contaminated clothing immediately. Wear self contained breathing apparatus in the presence of mists or vapors, or for cleaning up spills. Fire Fighting Phase: Material is not normally flammable. Use large amounts of water or smother with suitable powder. Fire fighters must be protected from contact with the material. Wear self contained breathing apparatus to protect against corrosive mists and vapors which may be given off.

TABLE 2 (CONT.)

Cyanide Solutions Tank Storage	Life Hazards: Extremely toxic. Do Not Handle with bare hands. Releases highly toxic and flammable hydrogen cyanide gas on contact with acids. Very toxic through inhalation or ingestion. Personnel Protection: Wear full protective clothing including safety goggles. Upon any contact with skin or eyes, the material should be washed off immediately. Remove contaminated clothing immediately. Wear self contained breathing apparatus when cleaning up spills. Storage: Separate from acids and oxidizing materials. Fire Fighting Phase: Water, dry chemical, alcohol foam or carbon dioxide may be used to fight a fire in an area containing cyanides. In advanced or massive fires, fire fighting should be done from a safe distance or from protected location. Fire fighters should wear protective clothing and self contained breathing apparatus.

TABLE 2 (CONT.)

Metal Sludges (Hydroxide) Tank Storage Drum Storage	Life Hazard: Ingestion of large amounts can cause intestinal disorders and even death. Toxicity primarily due to metals. Hydrogen sulfide can be released upon contact with acids and powerful oxidizers. Personal Protection: Wear full protective clothing including safety goggles. Self contained breathing apparatus should be worn if hydrogen sulfide presence is suspected (rotten egg smell). Storage: Keep separate from strong oxidizers. Fire Fighting Phases: Essentially nonflammable, however, if ignited must treat as a metal fire. Normal fire extinguishers, water, CO2, foam, may not be effective. Dry sand, ultra-sorb may be required to blanket fire.

TABLE 2 (CONT.)

Acid Solutions Tank Storage	Life Hazard: Corrosive contact can cause burns, damaged sight. Can be toxic if ingested. Personal Protection: Wear full protective (acid resistant) clothing including safety goggles. Upon any contact with skin or eyes, the material should be washed off immediately. Remove contaminated clothing. Wear self contained breathing apparatus if mists or vapors are present. Storage: Store away from cyanide and sulfide materials or combustible materials. Fire Fighting Phases: Material is not normally flammable. Use extinguishing agent appropriate for surrounding fire. If this material comes in contact with cyanide solutions, toxic cyanide gas may be released. Fire fighters should wear self contained breathing apparatus. Explosive hydrogen gas may be released on contacting metals.

TABLE 2 (CONT.)

Alkaline Solutions Tank Storage	Life Hazard: Toxic. A severe eye hazard; concentrated solution destroys tissue on contact. Personal Protection: Wear full protective clothing, including goggles and face shield. Storage: Separate from acids, metals, explosives, organic peroxides, and easily ignitable materials. Fire Fighting Phases: Material is not normally flammable. Use extinguishing agent appropriate for surrounding fires. Fire fighters should wear protective clothing and avoid contact with material.

TABLE 3

6.1 POTENTIAL VAPORS

The following is a list of flammable or toxic gases with a potential of being formed from chemicals used at the facility. All possible combinations or gases may not be included on this list.

Gas	Cause of Formation
1. Ammonia	Raising the pH above 9.0 when ammonia is present in solution.
2. Carbon Disulfide	Mixing acids or when dosing a reactor with DTC. pH levels below 7.0 may generate CS_2
3. Chlorine gas	Decomposition of bleach (NaOCl sol) from mixing with acids, metal particles, or other contaminants.
4. Cyanide gases	Mixing cyanide waste solutions with acids of lowering the pH, even by adding tap water.
5. Hydrogen gas	From the use of sodium borohydride in treatment reactors, and from mixing sodium borohydride with acids or water under certain conditions. Raising the pH above 10.0 with formaldehyde present, or adding hydrogen peroxide when organic compounds are present.
6. Hydrogen Sulfide	While dosing reactors with sodium sulfide, or mixing acids with sodium sulfide or sulfide wastes
7. Nitrogen Oxides	When mixing nitric acid wastes and their residues with organic materials or other undefined incompatible materials
8. Sulfur dioxide	Mixing acids with sodium metabisulfite, or when dosing a reactor with sodium metabisulfite.

6.2 WATER REACTIVE MATERIALS

Sodium Borohydride (Solution in Caustic)	Solution in caustic is not water reactive, however will evolve hydrogen gas in contact with metals especially aluminum or metal powder. Dilution with water will lower the pH and release hydrogen gas. Mixing with acid will release large quantities of hydrogen gas.

7.0 EMERGENCY EQUIPMENT

7.1 General

Section 264.52 (e) of 40 CFR requires that ETICAM maintain a list of all emergency equipment at the facility.

In addition, the location of each piece of equipment must be specified along with a brief outline of its capabilities. At a minimum, this equipment must include:

a. An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel.

b. A device, such as a telephone (immediately available at the scene of operations) or a hand held two-way radio, capable of summoning emergency assistance from the local sheriff department, or from state or local emergency response teams.

c. Portable pumps, fire extinguisher, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas or dry chemicals), spill control equipment and decontamination equipment.

d. Water at adequate volume and pressure to supply water hose streams, or foam-producing equipment, or automatic sprinklers, or water spray systems.

7.2 Specific

ETICAM maintains its facility in substantial compliance with all of the requirements specified in Subsection 7.1. With regard to preparedness and prevention, the following emergency response equipment is maintained at ETICAM.

7.2.1 Communications Equipment and Alarms

Telephones are available near the scene of operations. Attached to each phone is a list of emergency telephone numbers.

a. Portable 2-way radios are available for temporary communication if needed.

A phone operated public address system is maintained at this facility to provide immediate instruction to all personnel. Additionally a manually operated air horn will be maintained on the wall near the entrance to the offices in the event the PA system is inoperative.

7.2.2 Fire Control Equipment
(See Figure 2, Section 10.0)

The following fire fighting equipment is or will be available:

- Fire hydrants are located on the premises at Newlands Dr., for fire truck link up and/or use.
- 12 - 20 lb. ABC Fire Extinguishers as shown on drawings in Section 10.
- Main building is equipped with a sprinkler system throughout.
- Fire alarms are automatically activated when the sprinkler system is activated.

7.2.3 Spill Control Equipment
(See Figure 3, Section 10.0)

The following spill control equipment is or will be available on-site in the receiving bays:

- 20 empty open-head drums.
- 5 shovels.
- 40 - 50 lb. bags of industrial absorbent.
- Emergency generator.
- Sump (pit) pumps.

7.2.4 Personal Protective Equipment
(See Figure 4, Section 10.0)

The following stock of protective equipment is or will be maintained at the facility for use by personnel during an emergency and will be stored in the break room:

Equipment:	Number:
1. Protective Masks:	
- Plain dust and mist protective mask (nose & mouth)	3
- Half mask, double filter cartridge (nose & mouth)	6
- Full face shields	5
- Full face mask with hook up for canister or compressor	2
2. Cartridges for Masks:	
- Type R11 for dusts, fumes and mists	16
- Type R24 for ammonia and methyl amine	10
- Type R25 for organic vapor and acid gas	32
3. Canisters for Full Face Masks:	
- Type G3F for acids, gases, organic vapors, dusts, and mists	5
4. Self-contained breathing apparatus,	
- SCBA, Air Packs	3
5. Disposal TYVEK suits equipped with hoods, boots, and lightweight gloves	12
6. Pair of heavy-duty gloves and boots	12
7. Hard Hats	6
8. Full protective Fire Department Turnouts with coats, pants and helmets w/visor	4
9. Acid Resistant Suits	2

7.2.5 MEDICAL & FIRST AID EQUIPMENT

1. 2 - EMT First Aid Kits
2. 1 - Portable Oxygen Resuscitator
3. 1 - Stokes Basket or Litter

DECONTAMINATION EQUIPMENT

1. There are two standard emergency eyewash showers located within the truck receiving bays. These showers will be used to decontaminate the emergency equipment listed on page 7 - 28 following disposal of any disposable cartridge filters. If necessary, water and mild soap solution will be mixed up within a bucket for removal of any additional contamination.

2. The eyewash/showers are standard emergency showers capable of at least 40 gallons/minute flow for as long as necessary.

3. The water pressure outside the facility in the public system is approximately 90 psi and this pressure is available directly into the fire sprinkler system. The water supplying the emergency showers must flow through the water meter, and the expected residual pressure at the showers is at least 50 psi at the most distant emergency shower from the water meter.

4. The available water pressure, as listed above, is:

Pressure:	90 psi (@ main)
Volume:	60,000 gal. (Community System, without make-up)

7.3 ARRANGEMENTS WITH LOCAL AUTHORITIES

Title 40 of the code of federal regulations, Section 264.52 (c) requires arrangements be agreed to by local sheriff and fire departments, hospitals, contractors, and State and local emergency response teams. In fulfillment of the requirements of this part, ETICAM has made, or will make agreements that includes:

Arrangements to familiarize the Fernley Sheriff and Fire Departments with:

- The layout of the facility
- Properties and hazards associated with the materials & wastes handled at the facility
- Places where facility personnel would normally be working
- Entrances to the facility
- Evacuation routes

Agreements have been made with 1) Fernley Fire Department, 2) the Lyon County Emergency Management Director, and 3) the Nevada DEP, to provide support, as needed, during an actual emergency.

Arrangements have been made with 4) the Washoe Medical Center to familiarize their personnel with the properties of hazardous materials and wastes handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

5) The local police will provide traffic control and site security as needed during an emergency.

Said departments, agencies, and emergency response personnel will be requested to provide the services described below in the event of an actual emergency.

Each of the above agencies has been contracted and sent copies of ETICAM's Contingency Plan. The following arrangements have been requested:

Lyon County Sheriff Department, will receive a copy of the Contingency Plan, has been asked to provide the following assistance during an emergency:

- Immediate Response
- Crowd Control Assistance
- Communications Support
- Security to Affected Area
- Evacuation of Surrounding Areas if Required

Fernley Fire Department will receive a copy of the Contingency Plan and has been asked to provide:

- Primary Emergency Authority
- Immediate Response
- Primary Fire Fighting Services
- Rescue and Emergency Transport Services
- Communications Support
- Rescue Services

Washoe Medical Center received a copy of the Contingency Plan will be asked to provide:

- Primary Medical Services

7.4 PROVISION OF ADEQUATE AISLE SPACE

ETICAM has designed it's facility with adequate aisle space to allow the unobstructed movement of personal, fire protection equipment and decontamination equipment to any area of the facility operation in an emergency. This has been accomplished through the provision of aisles between all tanks and processing equipment.

Main access walkways are indicated on Figure 5 which shows evacuation routes.

NOTIFICATION CALL LIST

Whenever the contingency plan is implemented, the following agencies must be notified within 24 hours:

Fernley Vol. Fire Dept.
575-2321
31 S. Main St.
Fernley, Nv. 89408

Emergency Management Director
882-9159
18 Highway 95A North
Yerington, Nv. 89447

NDEP - AND - EPA:
Nev. Division of
Environmental Protection
201 S. Fall St. Capitol Complex
Carson City, Nv. 89701

WATER SPILLS: Day 687-4240
Night 687-5300

AIR RELEASES: Day 687-5065
Night 687-5300

HAZARDOUS WASTE: Day 687-5872

For Reportable Quantities on Table 4 Also Notify:

US ENVIRONMENTAL PROTECTION AGENCY
National Response Center
(800) 424-8802

8.0 NOTIFICATION REQUIREMENTS:

Following an incident requiring implementation of the Contingency Plan, the following notification will be made:

- Before operations resume, the owner or operator of the facility will notify the Director of Nevada DEP that all emergency equipment has been cleaned and put back in order, and that proper cleanup procedures have been followed.

- Within 15 calender days after an incident requiring Contingency Plan implementation or the release of a reportable quantity, the owner or operator will submit a written report to the Director of Nevada DEP documenting the following:

  - Name, Address, and Telephone Number of the Owner, or Operator

  - Name, Address, and Telephone Number of the Facility

  - Date, Time, and Type of Incident

  - Name and Quantity of Material(s) Involved

  - The Extent of Injuries, if any

  - An assessment of actual or potential hazards to human health or the environment, where applicable

  - Estimated quantity and disposition of recovered material that resulted from the incident.

THIS REPORT WILL BE FILED WITH:

DIRECTOR, NEVADA DEP

201 S. Fall St.
Capitol Complex
Carson City,Nv. 89710

TABLE 4

8.1 SARA TITLE III - REPORTING REQUIREMENTS

CHEMICAL NAME	Reportable Quantity RQ, pounds	CAS NUMBER
Aluminum oxide	-	1344-28-1
Aluminum sulfate	5,000	10043-01-3
Ammonia	100	7664-41-7
Ammonium Chloride	5,000	12125-02-9
Ammonium sulfate (solution)	-	7783-20-2
Cadmium and Compounds (D006)	10	- -0
Calcium hypochlorite	10	7778-54-3
Carbon disulfide	100	75-15-0
Chlorine	10	7782-50-5
Chromic acid	1,000	7738-94-5
		11115-74-5
Chromium (D007)	10	7440-47-3
Chromium and Compounds	-	- -0
Copper	5,000	7440-50-8
Copper and Compounds	-	- -0
Copper cyanide	10	544-92-3
Cupric chloride	10	7447-39-4
Cupric sulfate	10	7758-98-7
Cyanide and Compounds	-	- -0
Cyanide (soluble cyanide salts)	10	57-12-5

TABLE 4 (Continued)

CHEMICAL NAME	Reportable Quantity RQ, pounds	CAS NUMBER
Ethylenediamine tetraacetic acid (EDTA)	5,000	60-00-4
Ferric chloride	1,000	7705-08-0
Ferrous sulfate	1,000	7720-78-7
		7782-63-0
Formaldehyde	1,000	50-00-0
Hydrochloric acid (Hydrogen chloride (gas only))	*** 5,000	7647-01-0
Hydrocyanic acid	10	74-90-8
Hydrogen sulfide	100	7783-06-4
Lead (D008)	1	7439-92-1
Lead and Compounds	-	- -0
Lead sulfate	100	7446-14-2
Lead		15739-80-7
Lead sulfide	5,000	1314-87-0
Methyl chloroform	1,000	71-55-6
Nickel	1	7440-02-0
Nickel and Compounds		- -0
Nickel chloride	5,000	7718-54-9
Nickel hydroxide	1,000	12054-48-7
Nickel sulfate	5,000	7786-81-4
Nitric acid	1,000	7697-37-2
Nitric oxide	10	10102-43-9
Nitrogen dioxide	10	10544-72-6
		10544-72-6

TABLE 4 (Continued)

CHEMICAL NAME	Reportable Quantity RQ, pounds	CAS NUMBER
Phosphoric acid	5,000	7664-38-2
Potassium chromate	1,000	7789-00-6
Potassium cyanide	10	151-50-8
Potassium hydroxide	1,000	1310-58-3
Silver (D011)	1	7440-22-4
Silver and Compounds	-	- -0
Silver cyanide	1	506-64-9
Silver nitrate	1	7761-88-8
Sodium cyanide (Na(CN))	10	143-33-9
Sodium hypochlorite	100	7681-52-9
		10022-70-5
Sulfur dioxide	1	7446-09-5
Sulfur trioxide	1	7446-11-9
Sulfuric acid	1,000	7664-93-9
Zinc	1,000	7440-66-6
Zinc and Compounds		- -0
Zinc chloride	1,000	7646-85-7
Zinc cyanide	10	557-21-1
Zinc sulfate	1,000	7733-02-0

TABLE 4 (Continued)

** Indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).

*** The chemical name associated with this CAS registry number is listed as "hydrochloric acid" under the CERCLA hazardous substances and the Section 313 toxic chemicals and as "hydrogen chloride (gas only)" under the Section 302(a) extremely hazardous substances.

Notification reported to the following:

1. NDEP
2. Lyon County DEM County & State
3. National Response Center

See Section 3.3 and 3.4

Reference: TITLE III LIST OF LISTS - Revised December 1988

8.2 CONTINGENCY PLAN AMENDMENT

Periodically, ETICAM's Contingency Plan and Emergency Procedures Plan will be review and updated, as necessary. The plan will be immediately amended if necessary, whenever:

1. The plan fails in an emergency.

2. The facility makes changes in it's design, construction, operation, maintenance, or security system or other circumstances which would increase the potential for fires, explosions, or releases of hazardous waste constituents, or which may effect emergency response procedures.

3. There are changes in Emergency Coordinators.

4. There are changes in the amount or type of emergency equipment.

5. Applicable regulations are revised.

If changes are made in the Contingency Plan and Emergency Procedures Plan, updated copies showing these changes will be distributed to local authorities and the Nevada DEP.

8.2 REFERENCES

ETICAM's Contingency and Emergency Procedures Plan was written with reference to the following sources:

- Federal EPA Regulations 40 CFR 264.50, 264.56, and 40 CFR 264.37.

- Dept. of Transportation, 1980. Emergency Response Guidebook, Hazardous Materials. U.S. Dept. of Transportation Research and Special Program Admin., Washington, D.C.

- Lewis, Richard J. and Rodger L. Tatken, (eds.), 1980. Registry of Toxic Effect of Chemical Substances - 1979 Edition (Vol. 1 and Vol. 2). U.S. Dept. of Health and Human Services, Cincinnati, Ohio. Vol. 1 - 828 p., Vol. 2 - 770 p.

- Meyer, Eugene, 1977. Chemistry of Hazardous Materials. Prentice - Hall, Inc., Englewood Cliffs, New Jersey, 370 p.

- National Fire Protection Association, 1978. Fire Protection Guide on Hazardous Materials, 7th Edition. National Fire Protection Assoc., Quincy, MA. 755 p.

- Sax, M.I., 1979, Dangerous Properties of Industrial Materials, Van Nostrand, Reinhold Company, N.Y., N.Y.

- Wiess, G. (ed.), 1980. Hazardous Chemicals Data Book. Noyes Data Corp., Park Ridge, New Jersey, 1188 p.

- Office of Toxic Substances, 1988. SARA Title III List of Lists, U.S. Environmental Protection Agency, Washington, D.C.

9.0 AUTOMATIC MONITORING SYSTEMS

9.1 AIR MONITORS

Continuous monitors are located on the facility with alarm points as follows:

Cyanide Monitors	(Alarm Settings)
1. By West front gate	(1 ppm)
2. Storage Bay, next to the cyanide waste tanks	(10 ppm)
3. Detox Room, next to the cyanide reactor	(10 ppm)
4. Main building scrubber exhaust	(5 ppm)
5. Main heating system exhaust from plant	(5 ppm)

Hydrogen Sulfide Monitors

1. Main building scrubber exhaust	(5 ppm)
2. Main heating system exhaust from plant	(5 ppm)

A. MAIN PANEL

A central monitoring and control panel is located in the West Laboratory. In the event of a cyanide or sulfide alarm, a siren will sound inside and outside the plant to warn personnel of a problem. The monitors on the scrubber and heating system are equipped with a second high-high level alarm point which automatically shuts down its exhaust venting.

A high-high level on the scrubber would result in the scrubber fan shutting down; operating personnel would then determine the cause of the breakthrough, and add the appropriate chemical reagents, and restart the scrubber fan.

The high-high alarm on the ventilation system will automatically shut down that system, so that all venting would go through the scrubber where it can be controlled. The operator can shut down all ventilation systems and the scrubber by activating the emergency shutdown system.

The building is to be evacuated whenever the first lower alarm sets off the siren. The on scene emergency coordinator will determine what actions should be taken based on the circumstances; for instance, should the emergency shutdown be manually activated, or should the building vents be left operating.

The main panel has a red panic button which will activate the emergency shutdown sequence. This may be operated at any time, should the plant operator need to contain other potential toxic gas releases. The operator should activate the emergency system whenever he/she feels there may be a harmful reaction or situation occurring. This must be done in conjunction with a facility evacuation.

Alarm System and Response

Whenever the monitors activate the alarm, or the emergency shutdown is manually activated, a signal is also sent to Nevada Systems Alert. They have the following alarm indications:

1. CN at Front Gate
2. TLV, CN or H_2S
3. Hi CN or H_2S
4. Emergency Shutdown

Whenever they receive an alarm, they will notify the local emergency response agencies, and advise them of the alarm. They will also contact the facility and the emergency coordinator to advise them of and verify the alarm.

Wind socks are located in front and in the back of the plant so that personnel can remain upwind of a potential vapor release.

B. SUMMARY OF ALARM SETPOINTS (parts per million CN or Sulfide)

	High	High-high	Gas Detected
1. Front Gate	1.0	5.0	HCN
2. Storage Bay	10.0	N/A	HCN
3. Detox Room	10.0	N/A	HCN
4. Scrubber Exhaust	5.0	50.0	HCN & H_2S
5. HVAC System	5.0	50.0	HCN & H_2S

9.2 SUMP ALARMS

All tanks are surrounded by spill containment dikes capable of holding the entire contents of all tanks. A sump in each dike area is designed to serve as a collection point for small spills and pump out.

Each sump is equipped with a float alarm near the bottom of the sump. See Figure 4.

In the event of a leak or spill, the sump alarm will sound in the main office and signal the alarm company.

9.3 MEDICAL ALERT ALARMS

"EMERGENCY" push buttons are located throughout the facility as shown on Figure 2.

When this alarm is activated, a whistling pulse alarm will sound throughout the plant. Personnel will immediately proceed to the Medic Alert Panel in the lab to identify which part of the facility is affected.

The first person reading the panel will notify all plant personnel of the location by using the telephone paging system.

This alarm also signals the alarm company, who will telephone the plant, and summon an ambulance if the phone is not answered.

9.4 FIRE ALARM, SPRINKLERS & FIRE DOORS

Figure 1 shows the location of ventilation duct smoke detectors, fire alarm pull boxes and sprinkler components. Activation of any one of these devices will automatically signal the alarm company, who will notify the Fernley Fire Department.

Additionally, a total power failure will also activate this alarm sequence.

A. SMOKE DETECTORS:

Automatic smoke detectors are located in the ducts immediately down stream of the four heating systems. Two in ducts over main lobby, one at the main building heater, and one to the electrical room.

B. FIRE DAMPERS:

All ventilating ducts and the main scrubber duct are equipped with automatic fire dampers which close in the event of a fire. They are activated by fusible links. See Figure 2, Section 10.0. for the location.

C. PULL BOXES:

Pull boxes must be manually operated.

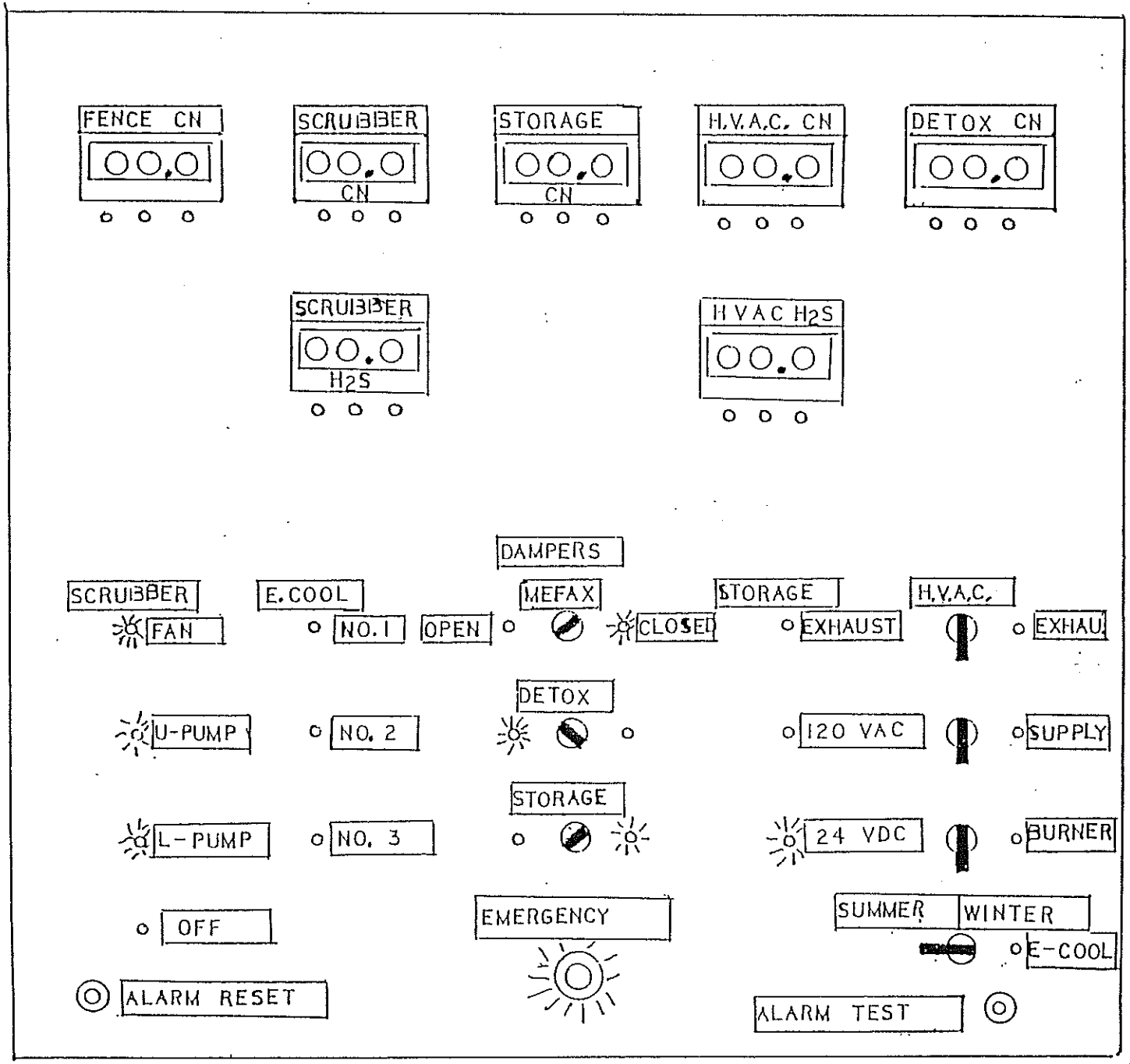
D. FLOW & TAMPER ALARM

In the event of a fire, sprinkler heads will automatically open from the heat of the fire melting fusible plugs. Whenever this occurs or someone should close the main sprinkler shut-off valve, an alarm will be activated.

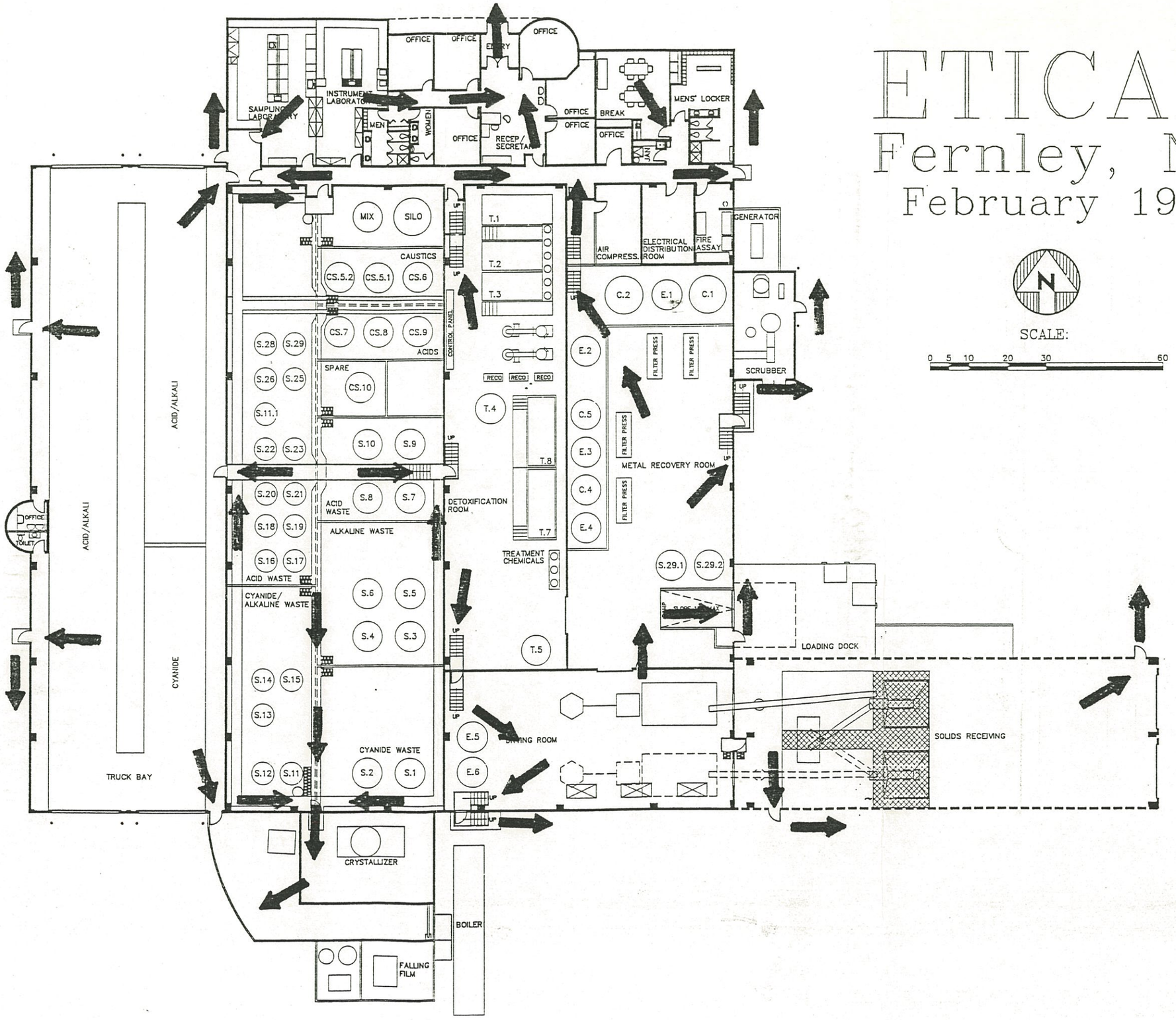
E. FIRE DOORS

Internal roll up doors are equipped with fusible links so that they will automatically shut during a fire. No access can be made through these doors when they are closed.

ALARM PANEL


FENCE CN
00.0
SCRUBBER
00.0
CN
STORAGE
00.0
CN
H.V.A.C. CN
00.0
DETOX CN
00.0
SCRUBBER
00.0
H2S
H VAC H2S
00.0
DAMPERS
SCRUBBER
FAN
E.COOL
NO. 1
OPEN
MEFAX
CLOSED
STORAGE
EXHAUST
H.V.A.C.
EXHAU
DETOX
U-PUMP
NO. 2
120 VAC
SUPPLY
STORAGE
L-PUMP
NO. 3
24 VDC
BURNER
OFF
EMERGENCY
SUMMER
WINTER
E-COOL
ALARM RESET
ALARM TEST

ETICAM
Fernley, Nv.
February 1990

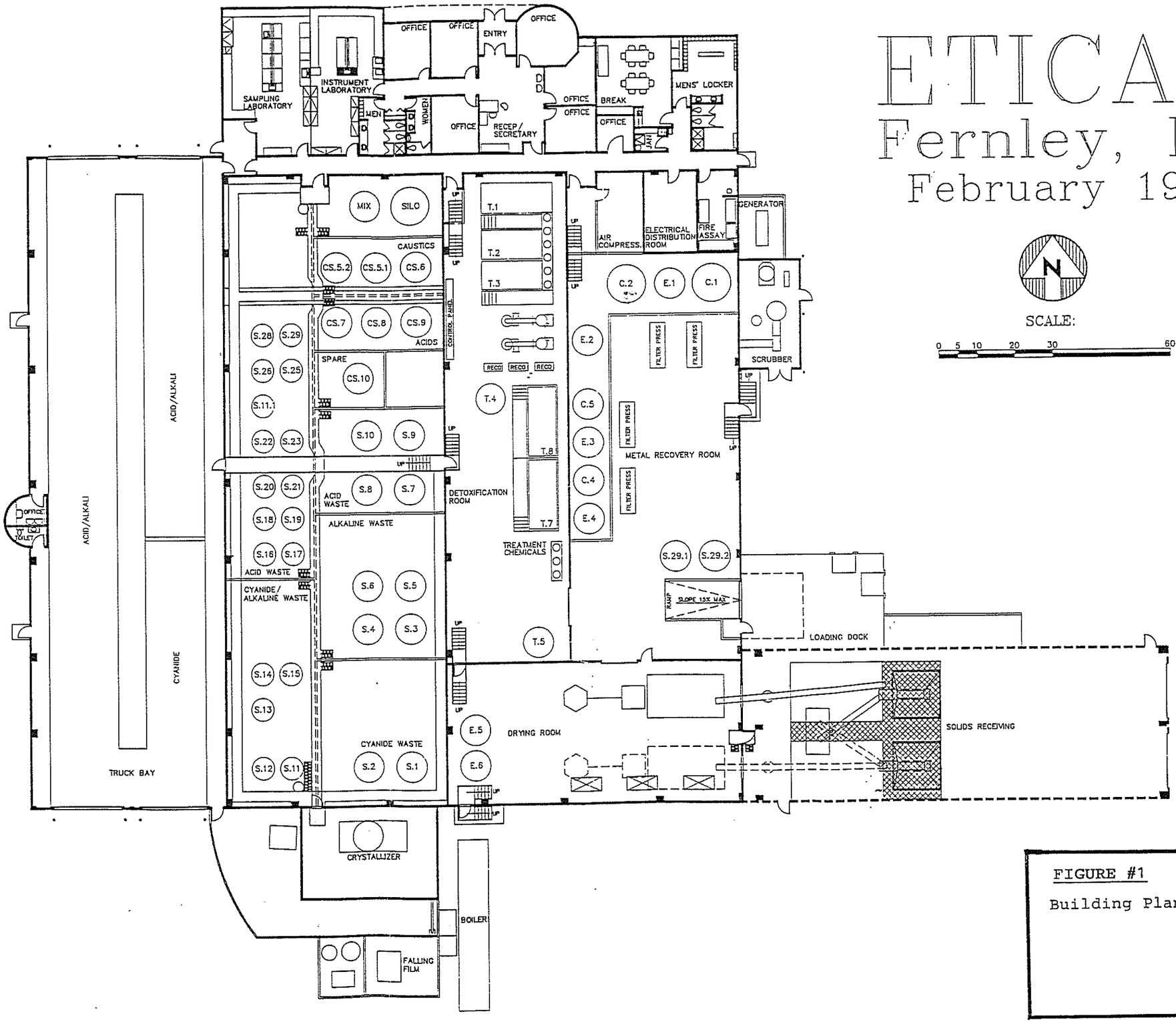


N

SCALE:

0 5 10 20 30 60

ETICAM
Fernley, Nv.
February 1990



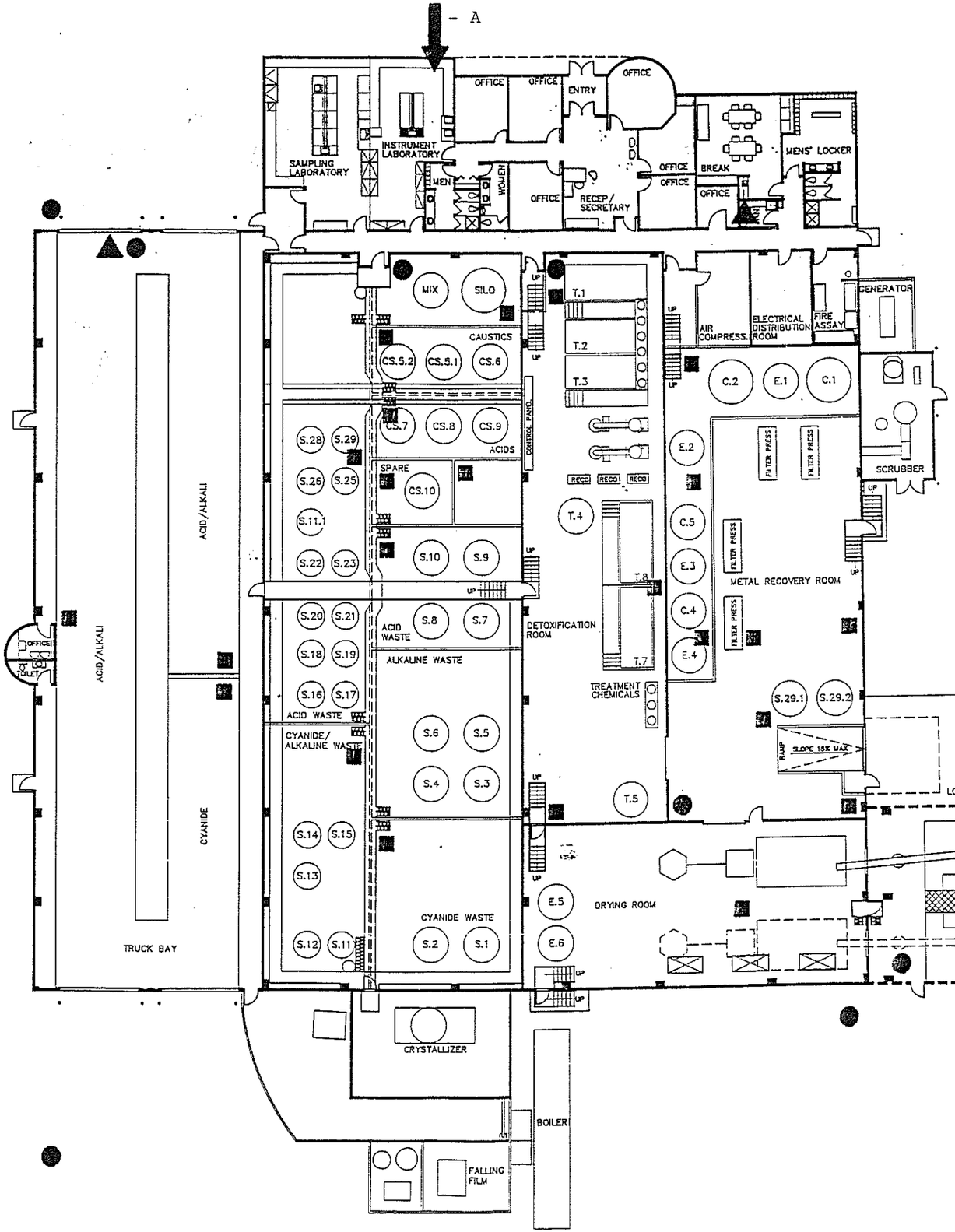
SCALE:

0 5 10 20 30 60

FIGURE #1

Building Plan

ETICAM
Fernley, Nv.
February 1990



N

SCALE:

0 5 10 20 30 60

FIGURE #2

Roof Hatches ..... ▲

Sump Alarms ..... ■

Video Cameras ..... ●

Water Shut Off ..... A

ETICAM
Fernley, Nv.
February 1990

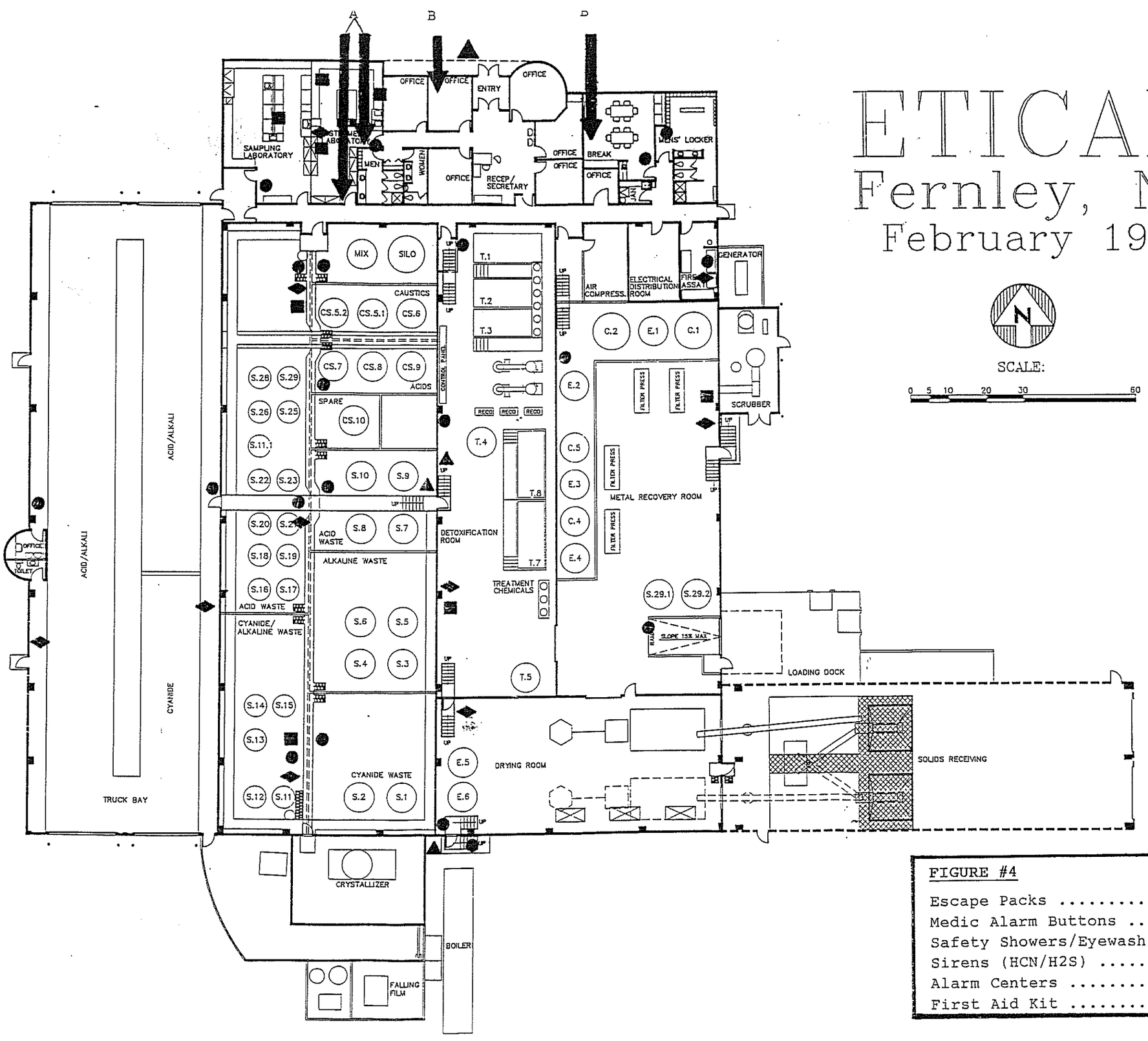
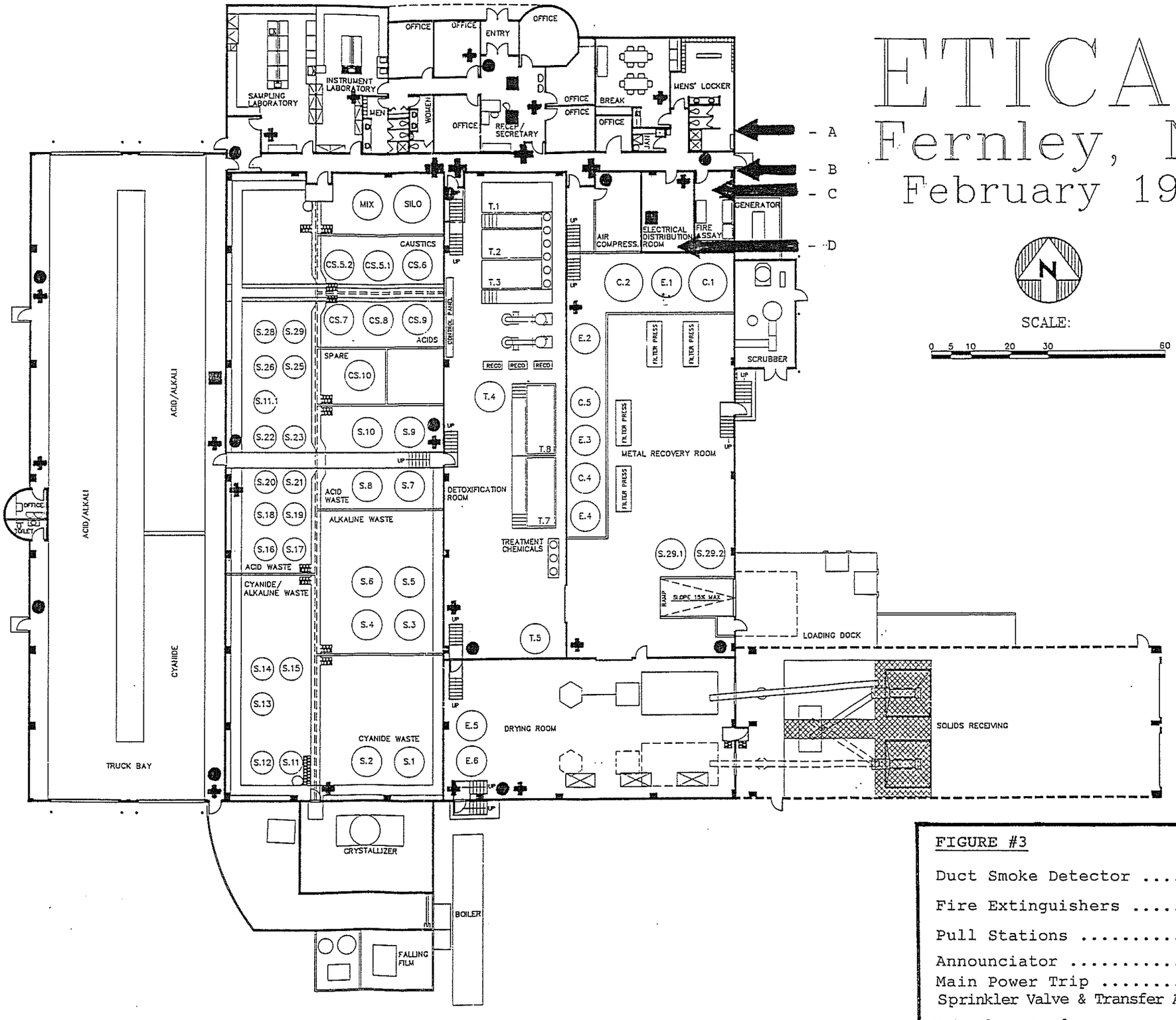


FIGURE #4

Escape Packs	■
Medic Alarm Buttons ...	●
Safety Showers/Eyewash.	◆
Sirens (HCN/H2S)	▲
Alarm Centers	A
First Aid Kit	B

ETICAM
Fernley, Nv.
February 1990



N

SCALE:

0 5 10 20 30 60

FIGURE #3

Duct Smoke Detector	■
Fire Extinguishers	✚
Pull Stations	●
Announciator	A
Main Power Trip	B
Sprinkler Valve & Transfer Alarm	C
Main Alarm Panel	D

8.0 STORAGE AND TREATMENT AREA

8.1 BACKGROUND INFORMATION

Expansion to ETICAM's Fernley facility will occur in two specific areas:

1. Liquid Waste Treatment
2. Solids Receiving, Storage, and Handling

The facility is currently permitted for storage and treatment of both liquid and sludge waste streams. Most of the expansion will involve additional waste liquid treatment tanks. The remaining portion will be the installation of bulk sludge receiving hopper tanks.

There will also be moderate ancillary improvements to the facility that will be required in conjunction with the resulting increase n waste processing capacity. The following Narrative will describe those facilities and processes which are currently in existence at the site, as well those which will be made in the initial expansion of the facility.

8.2 EXISTING FACILITIES

Liquid Waste Receiving

Incoming waste solutions are off-loaded in a receiving bay located on the west side of the facility. See Sheets A, C, and D. The bay is divided into three distinct sections which are separated by a berm in order to segregate and prevent mixing of incompatible wastes. The floor is sloped to contain ash water or spills and direct them into

spill tanks. The first spill tank is provided for cyanide wastes, and the second for non-cyanide alkaline or acid waste. Acid or alkaline solutions are off-loaded in the west bay and the north end of the receiving bay. The south end of the east receiving bay is used exclusively for cyanide and highly alkaline wastes which are compatible with cyanides.

The wastes are further segregated in the storage bay by metal constituents, concentrations, pH, and cyanide content. This separation is designed to ensure that metal types are separated so that the resultant product sludges are suitable for reclamation at smelters. Each segregated storage area is provided with secondary containment , capable of holding the entire contents of all tanks with in each containment area.

Wastes are unloaded into storage through gravity fed hoses and pipes. An additional provision is included to allow pumping directly to a treatment tank when required for special situation where cross mixing of wastes is critical, or immediate processing is desirable.

No additional storage tanks in the storage bay are included in this phase of the expansion.

Treatment Chemical Receiving

Treatment chemicals used in the processing of the waste solutions are also off-loaded into bulk storage tanks from the receiving bay. Hose connections are provided for the following chemicals:

1. Sodium hydroxide
2. Sodium Hypochlorite
3. Lime (calcium or magnesium hydroxide)
4. Sulfuric Acid
5. Hydrochloric, sulfuric, or mixed acids
6. Ferric chloride
7. Spare reagent tank

The incoming treatment chemicals are transferred by gravity to chemical storage tanks which are segregated by containment areas. The containment areas are segregated by material compatibility. The spare reagent tank is within it's own separate area, so that it may be used for any given material.

Reagents are pumped from storage into smaller dosing tanks for use in the treatment process.

Liquid Waste Processing

Waste solutions are pumped from storage, or directly from receiving into acid or alkaline/cyanide treatment tanks. Neutralization of corrosive, cyanide or sulfides is first performed, followed by metal precipitation. Generally metals are precipitated in the hydroxide and to the lesser

extent the sulfide form. There are three 7292 gallon mixed reactors, and one 2853 gallon neutralization reactor. One reactor (T-3) is designated for cyanide treatment, and the others are for acid or alkaline wastes.

Plant Scrubber System

Three "multi-stage" scrubbers are used to control potential air emissions from the operations. A three stage Reco-jet scrubber is connected to all tanks in the storage bay, and a two stage packed tower scrubber is connected to the reactors and sludge tanks. These scrubbers are set up for both acid and alkaline scrubbing solutions to handle both acid and alkaline vapors; such as hydrogen sulfide/cyanide, or ammonia.

The sludge dryers also have independent exhaust gas scrubbers.

All internal scrubbers discharge into the main building two stage scrubber, which additionally collects air from the building.

Each scrubber has one or more recirculation tanks associated with it. These tanks hold scrubbing reagents, and these liquids do not become wastes until they are transferred (blown down) from the tank to a storage or treatment tank.

Sludge Handling

Treated waste batches are pumped from treatment tanks into sludge holding tanks from where they are filtered to remove the metal bearing sludges. There are two sludge holding tanks with a capacity of 7159 gallons.

Filtration and Filter Cake Drying

Treatment sludges are separated in one of two filter presses. A 2 meter continuous belt press has been removed from service and will be replaced with two smaller plate and frame presses with this expansion. Each press has a capacity of approximately 10 cubic feet, which can be expanded by adding more plates. Filter cake from the presses is collected in open portable containers for transfer to the sludge dryers. Three dryers of four originally planned are in operation. Each dryer has a capacity of about 3 cubic feet of sludge per hour. Dried sludge is sampled and placed into containers for shipment to smelters. Both steel drums and bulk bags are used.

Ion-Exchange and Evaporation

Filtrate from the filter presses is transferred to a pH adjustment reactor where acid or caustic is added to neutralize the treated effluent prior to passing through the ion exchange system and into the effluent holding tanks. Ion exchange is not used for all effluents due to the high salt content present.

The effluent tanks are sampled and analyzed for effluent levels prior to discharge to the sewer, or for internal process limits prior to final evaporation.

The effluent tanks and evaporation system are operating under interim status because the residue salt was subsequently reclassified a listed hazardous waste by the "Derived From" rule after the facility was in operation. Additionally, the evaporator/crystallizer and associated gas/oil fired boiler are regulated by the facility's Air Pollution Control permit, which addresses potential air emissions from these units.

The system consists of a falling film evaporator in series with a spray evaporator/crystallizer; both working as a double effect evaporator for energy efficiency. Condensate from the secondary condenser is returned to the plant for reuse or discharged to the sewer.

The crystallizer concentrate is centrifuged to separate salt residues which are stored in containers on a contained storage pad prior to shipment to landfill, or other reclamation sites.

8.3 NEW FACILITIES

Liquid Waste Processing

The existing T-4 reactor will be replaced with a larger fiberglass reactor, and three new rubber lined steel reactor tanks will be installed for handling reactive sulfide, cyanide or alkaline wastes. Additionally, filtrate tanks S-29A and 29B will be replaced with larger crosslinked polyethylene cone bottom tanks.

The new bulk solids receiving and storage room will have two bulk receiving hopper tanks and a dissolution tank for resuspension or dissolving sludges. The following table summarizes the volumes and use of the new tanks:

NEW TANK SUMMARY

Tank Number	Volume, gallons	Use
T-4 (increase)	977	Acid/Alkaline
T-5	3,500	Alkaline/cyanide
T-6	8,140	Alkaline/cyanide
T-7	8,140	Alkaline/cyanide
C-3	7,000	Slurry
C-4	7,000	Slurry
H-1	5,000	Sludges
H-2	5,000	Sludges
D-1	3,830	Dissolution
S-29A (increase)	777	Filtrate
S-29B (increase)	777	Filtrate
Total addition	50,141 gallons	

New additional dosing tanks will be installed to service the new reactors. Acid dosing tanks will not be piped directly to the cyanide reactors as an added measure to prevent accidental acid addition to a cyanide solution. A second new two stage scrubber will be installed to handle the added reactors, sludge tanks, and dissolution tank.

Cyanide piping will be rerouted over alkaline or cyanide storage areas. Double walled piping systems will be used wherever cyanide piping passes over acid containment areas.

8.4 SLUDGE HANDLING

Filtration equipment will be relocated to the Metal Recovery room, and the drying equipment will be placed in the Dewatering room. Sludge and solids receiving will be conducted in the new building addition.

Sludge Storage

Two new cone bottom slurry tanks, C-3 and C-4 will be installed in the Metal Recovery room along with the existing tanks C-1 and C-2. See sheets D and E. The new slurry tanks will have a capacity of 7,000 gallons each.

Liquid Filtration and Filter Cake Processing

Two new filter presses will be installed along with the two existing presses. The 2 meter continuous belt press

has been removed and will be replaced with the new plate and frame presses.

Filter residue sludges and solids will be transferred in portable hoppers to the driers. Filtrate is transferred to treated effluent holding tanks, adjusted for proper pH if needed and sampled for final analysis. This filtrate will be discharged to the sewer under the facility Water Discharge Permit, or transferred to the evaporator crystallizer.

8.5 EVAPORATOR/CRYSTALLIZER

The evaporator/crystallizer system is operating under interim status. There are no expansion details included with the 25 % tank expansion; class 2 modification.

Plans for additional evaporation capacity are included in the Class 3 modification request concurrently submitted with this application.

8.6 BULK SLUDGE RECEIVING

Receiving

The sludge receiving area will consist of two bulk hopper tanks, each with a capacity of 25 cubic yards (5,000 gallons equivalent). The maximum size sludge shipment is normally less than 20 cubic yards, thus allowing for freeboard to account for the angle of repose which may vary from load to load.

Both hoppers will be able to receive bulk shipments from end dump trucks, roll-off hoppers, or by emptying containers into the hopper. Note that both facility generated filter cakes and received filter cakes will be processed through his system. Containers will be sampled according the waste analysis plan prior to accepting the shipment for unloading.

Each hopper tank is quipped with an unloading conveyor system. The solids can be transferred to the drying room for further processing as required, or unloaded into the dissolution tank D-1. The hopper will be equipped with an enclosure to cover the top and be vented to the new bag house dust collector. Since most filter cakes contain over 50 % moisture, dust is not expected to be a problem.

The truck level of the receiving building is sloped to drain into the unloading pit which has a sump at the low point. All wash water, or free liquids present in the load will drain into this sump, and be transferred to the plant for processing. This liquid may be stored in containers temporarily if further analysis is required to determine the proper and safe treatment scheme required.

Special attention was given to potential ground water contamination from this operation. An impervious clay liner was placed under the building foundation, with a leak detection access pipe at a low point.

Any accumulated liquids which might seep through the floor can be detected and removed. Additionally, the sump is constructed with a secondary liner so that operators can inspect the space below the sump for potential leakage. The entire concrete containment structure including the lower portion of the sump was constructed using chemical resistant water stops at all concrete joints. The finished floor and walls are further coated with an epoxy sealer. All concrete joints are caulked with a chemical resistant sealer.

Emission Control Systems

Potential dust emissions from the hoppers, conveyor drop points, and dryers will be connected to a bag house dust collector system. The details of this system design have been submitted as part of an Air Pollution Control Permit application. The descriptive portions of this application are included in section 12 of this application.

The dissolution tank will be covered and vented to the new two stage scrubber designed to control potential emissions from handling sulfide or cyanide bearing sludges.

Bulk Sludge Drying

Filter cakes with sufficient metal contents will be dried to specified moisture levels and containerized for shipment to smelters. Some sludges will be blended to generate larger quantities of uniform composition.

This blending will serve two primary purposes;

1. Produces larger quantities of uniform composition, subsequently reducing analytical costs as well as to provide a more efficient feed stock for a smelter. Many smaller varying feedstocks are not desirable, and result in higher costs of operation.

2. Allows reduction of unwanted components such as chlorides and phosphates which can be reduced when blended into a larger sludge mass.

Sludges are transported from the receiving hoppers to the drying area by conveyors. A cross conveyors will be used to allow blending from both hoppers. Each dryer is rated at approximately one cubic yard per hour depending on the moisture content. The new dryers will be equipped with a bag house dust collector.

The existing dryers will remain in operation to handle smaller quantities and specialty products. Provisions will also allow unloading the hoppers directly into containers for shipment.

Sludge Stabilization

Not all sludges produced will necessarily be suited for reclamation. For example the residual from a metals

extraction step to reclaim metals from sludges or other solid waste residues will be essentially metal free, and

may not have any inherent reclamation value. This includes salts from the evaporator crystallizer system will require stabilization treatment before they can be sent to a landfill for disposal.

These materials must be treated and stabilized to meet the requirements of Part 268-Land Disposal Restrictions. These standards require that waste materials be treated and or stabilized to meet minimum treatment standards as measured by the Toxicity Characteristic Leaching Procedure (TCLP). Stabilization is a form of treatment for non liquid wastes such as sludges and solids. The treatment is usually identical to liquid treatment except that different design of the mixed treatment tank is needed. Stabilization generally involves the addition of silicates, cements, and other compounds capable of chemically bonding with metal compounds contained in the sludge. These additives are mixed, and the chemical bonding process takes place aver several hours to several days. The entire mix is stabilized, and not further separations or processing are generally required.

All sludges destined for stabilization are sampled prior to acceptance for shipment to the facility, or if produced by the facility, a sample is taken for a treatability evaluation. This evaluation will consist of a demonstration of the stabilization process needed to meet the required standards. Stabilized waste will be sampled

prior to shipping off site, and analyzed for free liquids using the paint filter test, and tested TCLP constituents, and for total cyanides where appropriate.

The sludge stabilization process will consist of a Pug Mill fed by the sludge conveyor. The pug mill will hold approximately one cubic yard (200 gallons) of sludge and stabilization compounds which will be added to the feed to the pug mill where they are mixed. Depending on the material and required treatment level, simple mixing of cement may be adequate, or a more exotic mixture of treatment chemicals and stabilizing agents may be required.

Both the dried sludges and pelletized material will be placed in containers for storage and eventual shipment. A conveyor/bagger will be used for this operation.

8.7 ANCILLARY IMPROVEMENTS

In addition to those modifications described thus far, some additional minor improvements will be constructed as part of the facility expansion.

Compressors - One additional air compressor and air dryer will be installed in anew compressor room. The existing compressors will be relocated to this room also. This will provide adequate compressed air supply for the additional controls, pumps and filters.

Electrowinning - An electrowinning process area will be added as shown on sheet D. This will be used for removing the pure elemental metal directly from high strength solutions such as chromic acid, cyanide solutions, and nickel solutions. The resultant solution will then be transferred back to storage or treatment to fully reduce the residual metal content.

This process will handle recyclable materials and produce a elemental metal product for sale in the metals market. In accordance with Part 264.1 (g)(2) and 261.6(b)(1), Which stipulates that "(the recycling process itself is exempt from regulation.)"

Peroxide and Ozone - An area for peroxide storage and ozone generation is shown on sheet D. Peroxide is used for oxidation of cyanides, and organic chelating agents such as EDTA, formaldehyde, and other complexing agents used in plating solutions.

Carbon Columns - Two carbon columns will be used to remove trace organic constituents in emergency situations. An example is the presence of a solvent is discovered, and removal is necessary to protect plant equipment. The waste solution would be pumped through the carbon the remove the organic. Spent activated carbon would be managed as a hazardous waste using the waste code of the waste stream from which it is derived from. Additionally,

the carbon could be described by one of the "D" codes depending on the material concentrated in the carbon.

Sumps - All sumps will be lined with a chemical resistant liner and have level alarms to alert operators when liquids are present.

Dump Tanks - Two existing dump tanks are used in the crystallizer for holding crystallizer contents during maintenance, and for segregating non listed from listed waste streams. No new dump tanks are planned with this class 2 modification. Note that these tanks are currently operating under interim status.

Centrate Tanks - One centrate tank is used to collect centrate from the crystallizer centrifuge, and as a feed tank for the crystallizer. No new centrate tanks are included with this class 2 modification. This tank is also operating under interim status.

Safety and Health Considerations:

1. All new concrete floor surfaces and sumps will be coated with chemical and traffic resistant coatings.

2. The bulk receiving storage hoppers will have low rise sides that extend from the finished floor elevation to railing height. A "grizzly" screen will be over the hopper to separate large debris which might enter the system. This will also provide safety from personnel falling into the hopper.

3. All processing areas will be outfitted with sumps and level indicators to intercept spillage of wastes and rinse water. All new tank storage areas will have secondary containment to meet all applicable county, state and federal regulations. This containment will consist of concrete berm walls creating an enclosed perimeter which will have a volume greater than 110 % of the volume of the largest tank in the containment area.

4. All new building areas will be provided with fire sprinkler networks and the associated appurtenances. All fire protection equipment will meet Factory Mutual standards.

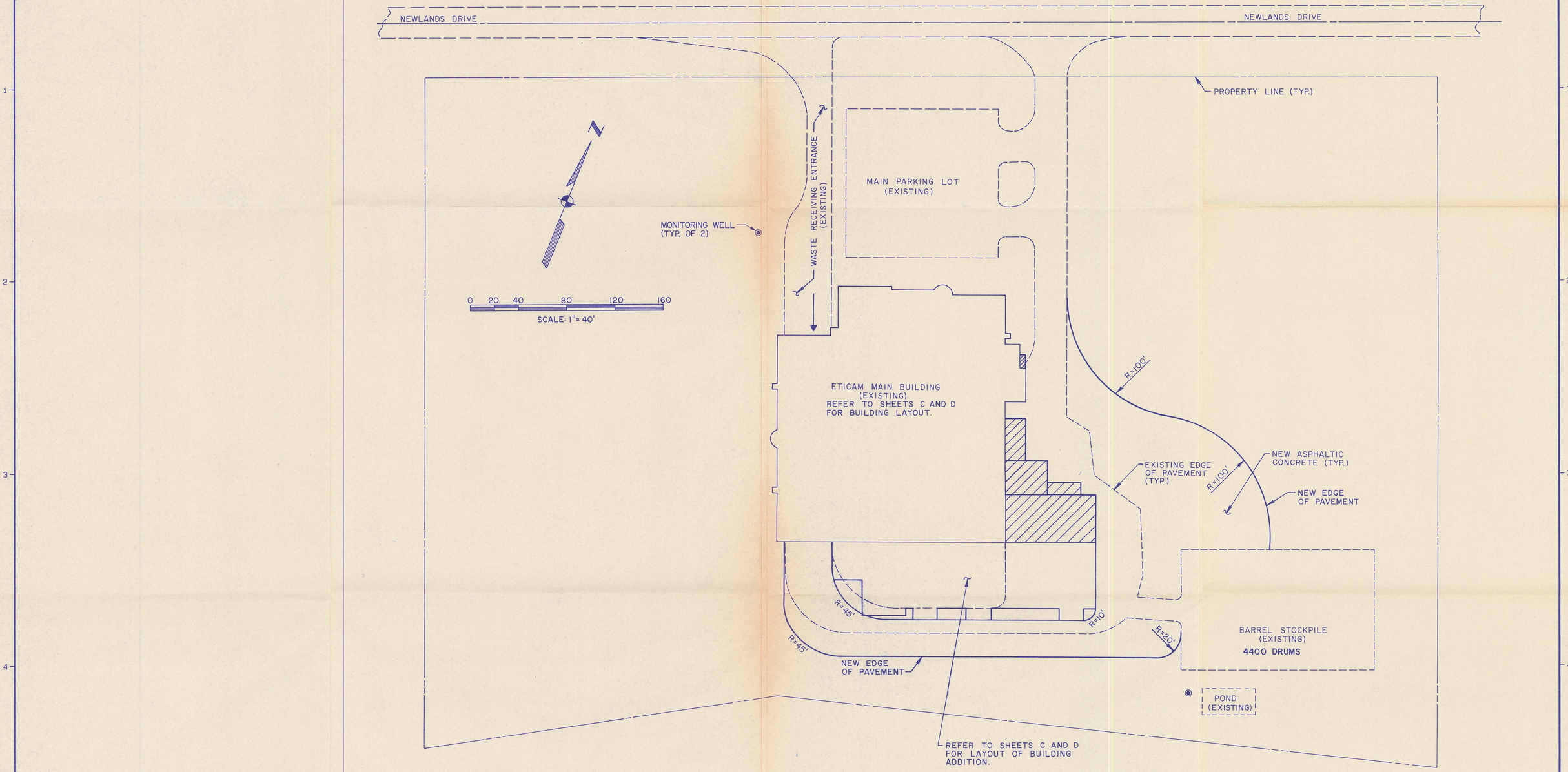
5. Safety showers and eye wash stations will be provided in all new waste processing areas, in addition to hose bibs for equipment wash water.

6. Electrical outlets will be provided for portable equipment.

Site Improvements - Paving and grading improvements will be made to the existing site as shown on sheet A. These improvements will accommodate the design of the new receiving facility to allow paved areas for trucks to maneuver. The new paved areas will include curving to direct rain waster or potential spillage to one low point where containment measures can be instituted. Note that all shipments are required to be inside the unloading bays

before they are uncovered and sampled.

The sewer discharge line has also been removed from the plant and will be reinstalled outside the South side of the new solids receiving building. New piping, flow monitoring and sampling will be installed in accordance with requirements set by Fernley Utilities.



Revised	Description	Submit.	Appr'd.	Date
1	REMOVAL OF TEMPORARY ROLL OFF STORAGE	JCE	DHR	6/29/90

Refer to Tracing for Latest Revision

Reference Information and Notes:

Designed	BAN/JCE
Drawn	TMM
Checked	ELM
Date	SEPT., 1989

ETICAM

Kennedy/Jenks/Chilton — Reno, Nevada

Submitted: _____ Approved: _____

INITIAL EXPANSION 1989

SITE PLAN

Scale: AS SHOWN

Job No. 897032.00

Sheet A of

To NaOH
To NaOCl
To H_2SO_4
To $FeCl_3$
To HCl
To Misc Reagent

NaOH
NaOH
NaOCl
H_2SO_4
$FeCl_3$
HCl
misc. Reagent

HCl
$FeCl_3$
H_2SO_4
NaOCl
NaOH

T-1
T-2
T-3
To C1
To C2
To C3
To C4

Flush water
To E-5

C-2
E-1
C-1
FP-2
FP-1
E-2

To T-1
To T-2
To T-3
To T-6
To T-7
To T-5
To T-4
2nd step Lines

To T-1
To T-2
To T-3
To S-28 & 27
To S-26 & 25
To S-11.1
To S-22 & 23
To S-10 & 9
To S-8 & 7
To S-6 & 5
To S-4 & 3
To S-20 & 21
To S-18 & 19
To S-14 & 17

Acid sump

S-28
S-27
S-26
S-25
S 11.1
S-22
S-23
S-20
S-21
S-18
S-19
S-16
S-17
S-14
S-15
S-13
S-12
S-11

S-10
S-9
S-8
S-7
To T-1
To T-2
To T-3
To T-1
To T-2
To T-3
S-6
S-5
S-4
S-3
Flush water

H_2SO_4
NaOCl
NaOH
T-6
T-7
To C-1
To C-2
To C-3
To C-4
T-4
T-5

C-3
FP-3
To E-5
E-3
C-4
FP-4
To E-5
E-4
E-5
To Evaporator
E-6

Flush Water
To S-14 & S-15
To S-13
To S-12
To S-11
To S-1 & S-2
To T-4
To T-5
To T-7
To T-6

CA sump

S-2
S-1
To T-4
To T-5
To T-7
To T-6

Condesate (Flush water)

Crystalizer
Salt Residue
Evaporator

Electrowinning
S-29.1
S29.2
To Reactors

To T-6 & T-7
To T-2 & T-3
D-1
Solids
H-1

Reagents
Hopper
Stabilized material
Pug Mill

SHEET B

PROCESS FLOW DIAGRAM

SCALE:	APPROVED BY:	DRAWN BY: Lisa Bosley
DATE: 8-4-90		REVISED
ETICAM - Fernley		DRAWING NUMBER: # 105

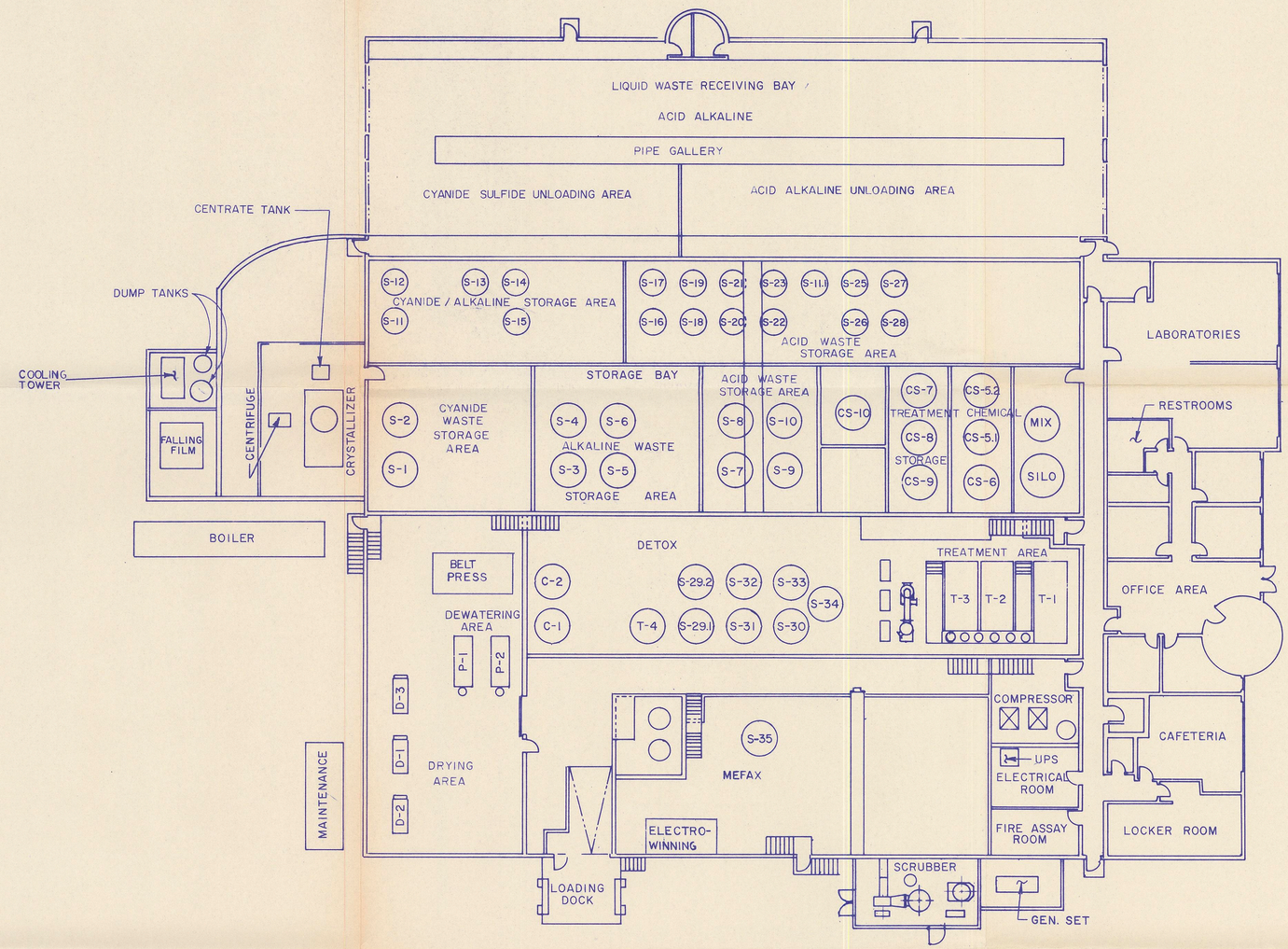
TANK LEGEND

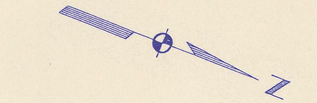
EXISTING TANKS

CURRENT DESIGNATION	NEW DESIGNATION	PURPOSE	VOLUME (GAL.)
S-11	B/CN 17	COLLECTING BASIN -	3223
S-12	B/CN 18	SPECIAL WASTE WATER	3223
S-13	B/CN/22	CYANIDE	3223
S-14	B/CN 24		3223
S-15	B/CN/23		3223
S-16	A-30	COLLECTING BASIN -	3223
S-17	A-29	SPECIAL WASTE WATER ACID	3223
S-18	A-32		3223
S-19	A-31		3223
S-20	A-34		3223
S-21	A-33		3223
S-22	A-36		3223
S-23	A-35		3223
S-11.1	A-38		3223
S-25	A-39		3223
S-26	A-40		3223
S-27	A-42		3223
S-28	A-41		3223
S-1	B/CN 1	COLLECTING BASIN -	6684
S-2	B/CN 2	CYANIDE	6684
S-3	B-7	COLLECTING BASIN - ALKALI	6684
S-4	B-8		6684
S-5	B-9		6684
S-6	B-10		6684
S-7	A-13	COLLECTING BASIN - ACID	6684
S-8	A-14		6684
S-9	A-15		6684
S-10	A-16		6684
CS-7	CS-7	VIRGIN CHEMICALS	5283
CS-8	CS-8		5283
CS-9	CS-9		5283
CS-5.2	CS-5.2		5283
CS-5.1	CS-5.1		5283
CS-6	CS-6		5283
C-1		SLUDGE TANK	7159
C-2		SLUDGE TANK	7159
T-4		NEUTRALIZATION BASIN	2853
T-1		TREATMENT BASIN	7291
T-2		TREATMENT BASIN	7291
T-3		TREATMENT BASIN	7291
S-29.2	E-2	COLLECTING BASIN - CLEAR	3223
S-29.1	E-1		3223
		SCRUBBER WATER RECYCLE	500

INTERIM STATUS (Effluent Storage and Evaporation Equipment)

S-31	E-3	COLLECTING BASIN -	6684
S-32	E-4	TREATED WATER	6684
S-30	E-5		6684
S-33	E-6		7159
S-34	E-7		7159
S-35	E-8		7159
		DUMP TANKS (1)	1000
		(2)	500
		CENTRATE TANK	250
		FALLING FILM	500
		CRYSTALLIZER	1500





0 8 16 32 48 64

SCALE 1" = 16'

Revised	Description	Submit.	Appr'd.	Date
⚠	REVISED TANK INFORMATION	JCE	DHR	6/29/90

Refer to Tracing for Latest Revision

Reference Information and Notes:

Designed	BAN/JCE
Drawn	TMM
Checked	ELM
Date	SEPT., 1989

ETICAM

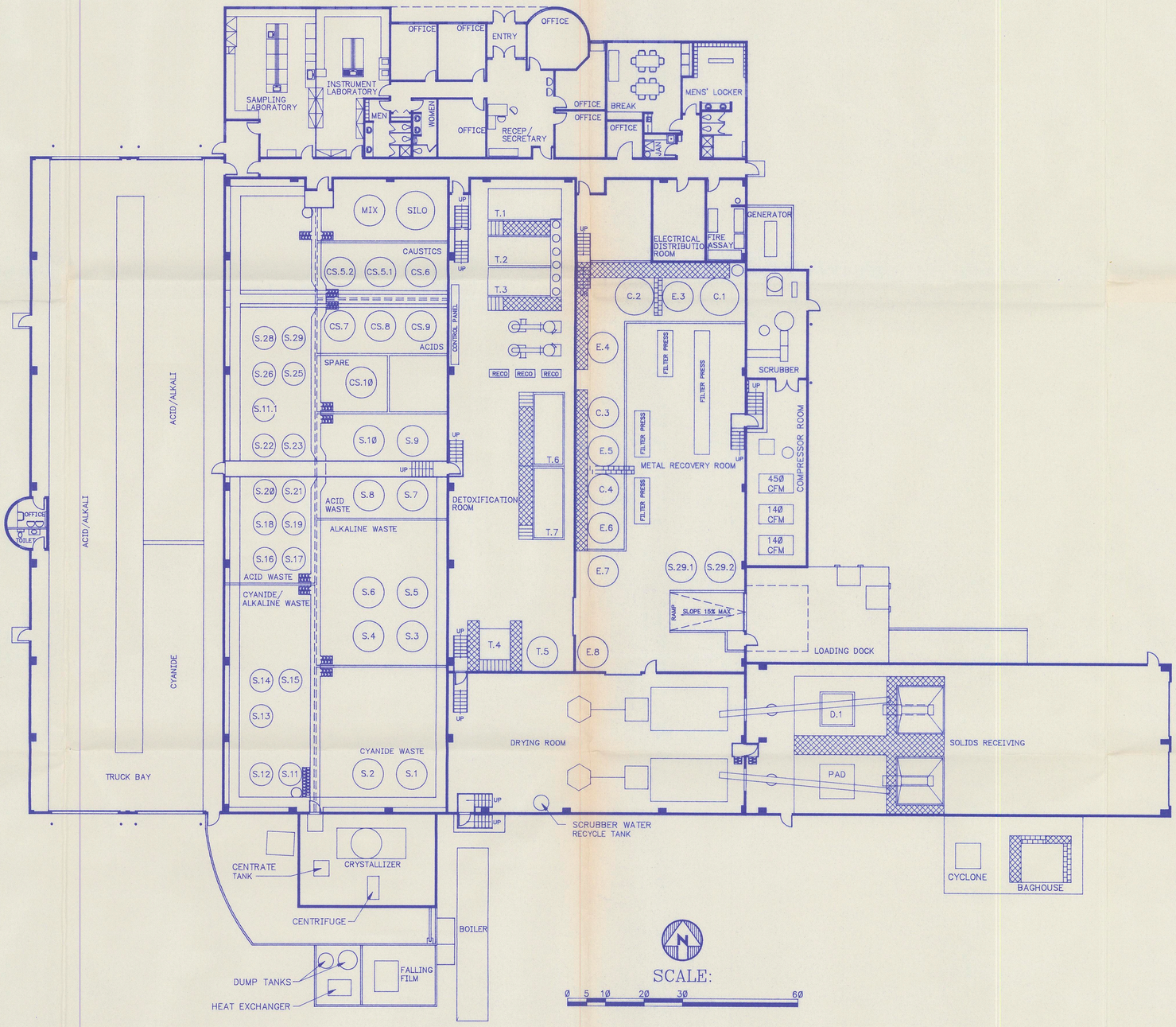
Kennedy/Jenks/Chilton — Reno, Nevada

Submitted: _____ Approved: _____

INITIAL EXPANSION 1989

BUILDING LAYOUT (EXISTING)

Scale	AS SHOWN
Job No.	897032.00
Sheet	C
of	



ETICAM

Fernley, Nv.

SHEET – D, July 1990

Benjamin B. Bandt
7/11/90

ATTACHMENT 10

TANK PLANS AND SPECIFICATIONS

Page A-14(a) adds new tanks to Table 8.2
in the original permit application

TABLE 8.2
Wastewater Treatment and Storage
Tank Specifications
Continued

Tank No.	Description of use	Type (construction)	Capacity cu. meters gallons	Approximate Dimensions (lgth. x width x hgt. or dia. x hgt.) in m and feet	Wall Thickness (MM) or U. S. Equivalent (IN)
C-3 and C-4	sludge tank	polyethylene cone	7000	10"1" Dia. X 19"1"	
D-1	dissolution tank	steel rubber lined	3830	8' X 8' X 8'	.25 steel .25 rubber
H-1 and H-2	solids hopper	steel UHMW lined	5000	12'L X 12'W X 4' D X 15' H	.25 steel
T-5	alkaline/ cyanide reactor	FRP cone bottom	3500	12' X 7' cone	.5 side .75 bottom
T-6 and T-7	alkaline/ cyanide reactor	steel rubber lined	8140	16' X 8' X 8'6"	.25 steel .25 rubber
T-4*	alkaline/ cyanide reactor	steel rubber lined	3830	8' X 8' X 8'	.25 steel .25 rubber
S-29A* and S-29B*	collecting basins clear	polyethylene cone	4000	8' Dia. X 10' cone	
	pug mill	steel	800	11' X 8'4" X 6'	.25 steel
	dryers #1, #2, #3	steel	1 cu. yd.	6' X 3' X 1.5'	.25 steel
	dryers #5 & #6	steel	5 cu. yds.	9' X 5' X 3'	.25 steel

* Replaced existing tanks.

DRAWINGS SHOWING PIPING DIAGRAMS

OF NEW PIPING SYSTEMS

Drawing numbers 100 through 105

8.70 DIAGRAMS OF NEW PIPING SYSTEMS

Drawing numbers 100 through 105 show the schematic and plan view layout of revised and new piping systems. These systems have been modified or designed to eliminate cross mixing of waste streams by using separate pipes dedicated to each tank or reactor.

Additionally, hose connections are used to make connections to a manifold, again allowing only one hose to be connected at a time. This eliminates the old system which allowed tanks to be connected through a series of valves.

These Drawings are as follows:

Dwg # 100 TYPICAL CROSS SECTION OF TANKS AND PIPING

Shows the relative elevations of the Truck Bay, Storage Tanks, and Reactors.

Dwg # 101 PIPING DIAGRAM FOR TANKS B/CN1-2 AND B/CN17-21

Note that the tank numbers are the same as the originally labeled S tanks. B/CN designates base or cyanide storage.

This drawing shows new segregated piping replacing the original common fill lines for larger groups of tanks, as well as pump out lines to the reactors.

Dwg # 102 PIPING DIAGRAM FOR TANKS B 7-10 AND A 13-16

Shows new segregated piping feeding the existing reactors; replacing common manifolds.

Dwg # 103 PIPING DIAGRAM FOR TANKS A 29-41

Shows new segregated pipe arrangement, and special valve configurations to allow none contamination of line segments.

Dwg # 104 EFFLUENT PIPING

Shows approximate actual floor plan layout and piping systems. These are dedicated filtrate return lines used for multiple step treatment. These lines replace existing temporary hose systems. Note that short hose connections will be made to the proper line at a manifold in the dewatering room.

Tanks E-3, 4, 5, & 6 become the filtrate receiving tanks, and tanks E-7 & 8 are used for crystallizer feed and condensate return where sampling of effluent is conducted prior to discharging. This tank may contain condensate or treated effluent.

These tanks are the same as originally identified tanks S-30, 31, 32, 33, 34, & 35.

Dwg # 105 SLUDGE TRANSFER PIPING

Shows dedicated piping from storage tanks to reactors as well as from the reactors to the slurry tanks, and from the dissolution tank to the reactors.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.10 INTRODUCTION

11.11 GENERAL

This plan describes how ETICAM will close its hazardous waste treatment and storage facility in a manner that:

- Minimizes the need for further maintenance and
- Controls, minimizes or eliminates post-closure escape of hazardous waste, hazardous constituents, or waste decomposition products to the ground, or to surface waters or to the atmosphere.

This plan sets forth all of the steps required to be taken by ETICAM to properly and completely close its hazardous waste storage facility. These steps include:

1. - A description of how and when the facility will be partially (if applicable) and ultimately closed.
2. - An estimate of the maximum inventory of wastes in storage at any given time.
3. - A description of the steps needed to decontaminate hazardous waste equipment during closure.
4. - A schedule for final closure.
5. - Certification requirements by an independent registered engineer.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.20 HAZARDOUS WASTES STORED AT ETICAM

11.21 DESCRIPTION AND LIST OF WASTES

ETICAM is a hazardous waste treatment and storage facility located at 2095 Newlands Drive East in Fernley, Nevada.

The facility accepts, stores and treats various materials which are considered to be hazardous wastes as described in its Part B Hazardous Waste Permit.

The facility stores and treats hazardous wastes in tanks and containers. Generally, wastes stored in tanks are aqueous and are processed through the facility's treatment systems. Containerized waste includes liquids, sludges, and residual salts from the evaporation of treated effluent. The following is a general breakdown of the categories of wastes accepted at ETICAM:

Waste Category	EPA Waste Code	EPA Process Code
1) Metal Containing Liquids and Sludges	F006, F008 D006, D007 D008, D011	S01, S02 T01, T04
2) Cyanide Bearing solutions; plating solutions (non-cyanide) Includes precious metal solutions	F007, F009 D002, D003	S01, S02 T01
3) Other corrosives; acids, alkalis, plating & stripping solutions (non cyanide), Includes precious metal solns.	D002	S01, S02 T01

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.22 MAXIMUM INVENTORY

The estimated maximum inventory of hazardous waste and treated effluent in storage/treatment at any given time at the facility is based on the maximum tank volume as follows:

Tank Inventory:

No. & Volume	Contents:	Maximum Inventory:
4- 6,600 gal 13-3,168 gal	acid solutions	67,584 gal
4- 6,600 gal 2- 3,168 gal	alkali solutions	32,736 gal
3- 7,292 gal 2- 8,140 gal 2- 3,830 gal 2- 7,160 gal 2- 7,000 gal 1- 3,500 gal	process tanks	77,636 gal
6- 6,600 gal	treated effluent	39,600 gal
2- 6,600 gal 8- 3,168 gal	cyanide solutions	38,544 gal
2- 5,000 gal	sludge receiving	10,000 gal
	Sub Total	266,100 gal

Container Inventory:

4,400 drums (55 gal)	Sludges or Salts (evaporation residue)	242,000 gal

Total Inventory at Closure (Max) ..... 508,100 gals.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.30 CLOSURE SCHEDULE

The following schedule includes anticipated dates when wastes will no longer be accepted, treated or stored at ETICAM, and intervening closure milestone dates which will allow tracking of the progress of closure.

Closure Event:	Anticipated Completion Date:
1) Waste no longer accepted, stored or treated.	Year 2035 A.D.
2) Notify EPA/NDEP of the Closure Initiation Date.	180 days before date of initiation of closure
3) Final shipment of waste accepted.	Closure initiation date
4) * Decontaminate loading/ unloading areas and all floor and tank containment areas subject to spills and test rinse waters.	Within 70 days of closure initiation date
5) * Treat all remaining inventories of waste on site and decontamination wastes.	Within 85 days of closure initiation date
6) * Decontaminate all tanks, piping, pumps, filters.	Within 110 days of closure initiation date
7) * Treat all tank decontamination rinse waters.	Within 120 days of closure initiation date
8) * Ship all containers of sludges and salts, drums of contaminated absorbent and personal protective equipment to permitted off site facilities.	Within 130 days of closure initiation date
9) * Decontaminate storage pads.	
10) Submit certifications of closure to EPA/NDEP by owner/operator and a registered prof. engineer.	Within 140 days of closure initiation date

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11) Invite EPA/NDEP to review closure.	Within 150 days of closure initiation date
12) Closure complete.	Within 180 days of closure initiation date

* All items above marked with an asterisk are closure steps requiring inspection and/or supervision by an independent registered professional engineer.

11.40 NOTIFICATION OF INTENT TO CLOSE

At least 180 days before the date closure is to begin, ETICAM will notify EPA and the Nevada DEP of the exact date it intends to initiate closure. In the event that amendments are required to the closure plan, said amendments will be submitted to EPA/NDEP along with the aforementioned notification of closure initiation date. If EPA/NDEP does not approve the plan or requires it to be modified, ETICAM will submit a new or modified plan to EPA/NDEP within 30 days of the date of such notification by EPA/NDEP.

11.50 REMOVAL AND/OR TREATMENT OF HAZARDOUS WASTE INVENTORIES

This section of the closure plan will describe how all hazardous waste at the facility will either be shipped off-site to a permitted facility or treated on-site. All of the actions indicated in this section will be completed within 90 days of the closure initiation.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.51 SHIPMENT OFF-SITE

Following decontamination activities specified in this plan, ETICAM will ship all inventories of hazardous wastes and residues which cannot be treated on-site to permitted off-site facility(ies). This is expected to consist only of salt residues from the evaporator/crystallizer. Said removal of wastes will be completed within 90 days of initiation of closure as indicated in Section 11.50.

All transporters will possess hazardous waste transporter licenses in Nevada and all intermediate states, and will have obtained an EPA identification number. All off-site facilities utilized will be fully permitted to accept the waste shipped.

11.52 TREATMENT OF REMAINING INVENTORIES

All remaining inventories (including the decontamination wash and rinse waters from the container storage areas and tank cleaning) will be treated on-site through the treatment systems. However, the closure cost estimate is based on off-site disposal of all liquids, sludges, and salts by a third party.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.60 DECONTAMINATION OF HAZARDOUS WASTE STORAGE/TREATMENT AREAS

This section of the closure plan will describe how facility equipment and structures used to manage hazardous wastes will be decontaminated.

11.61 TANKS, PUMPS AND PIPING

Once all non-treatable waste has been shipped off-site and all treatable waste has been processed, the empty treatment/storage tanks will be decontaminated one by one. All tank interior surfaces, will be thoroughly washed with a high pressure steam jenny cleaning unit containing a detergent solution. All wash water will be pumped to the 6600 gallon main treatment tank for appropriate treatment. Following the washing operation, each tank interior will be rinsed using the high pressure steam jenny unit without detergent. This first rinse will also be pumped to the above tanks for treatment. A second rinse will be performed and a composite sample of the rinse water will be collected for analysis to determine if decontamination is complete. Analytical testing for listed wastes will involve testing for the hazardous constituents for each listed waste previously stored in a particular area being decontaminated (said constituents being identified in the waste analysis plan; particularly for cyanide and metals. Following tank decontamination, the filter

presses will be cleaned using the steam jenny unit by applying one detergent wash and two rinses. The second rinse will again be sampled and tested as previously described to insure decontamination is complete. During the tank decontamination procedures, all of the pumps and piping in the facility should have been adequately washed and rinsed. Any pumps and piping not already cleaned will be decontaminated by pumping through a clean water and detergent solution equal to three times the interior capacity of the line to be cleaned. This wash will be followed by two rinses of clean water. All wash and rinse waters from the filter presses, pumps, piping, clarifiers and auxiliary equipment decontamination at facility will be pumped to the 6600 gallon main treatment tank for treatment. Following tank pipe decontamination, all tank area secondary containment structures will be cleaned and decontaminated using one wash and one rinse from the high pressure steam jenny unit. It is estimated that 10,000 gallons of wash and rinse water will be generated from the tank, pumps, piping and auxiliary equipment decontamination.

During the last stages of decontamination operations, only the main 6600 gallon treatment tank, one of the clarifiers and intermediate pumps and piping will be operational. Any sludge generated will be container-

ized directly from the filters for shipment off-site. Final washing and rinsing of the 6600 gallon tank and the filters will be completed with the resultant waters evaporated and the salt residue containerized for off site disposal. It is estimated that 4 drums (220 gal) of sludge will be generated from treatment of all decontamination wash and rinse waters.

11.62 TRUCK UNLOADING AREA DECONTAMINATION

Unloading area decontamination will be carried out in much the same way as tank and containment area decontamination. First, the entire area will be washed with the steam jenny containing a detergent solution. The wash water will be pumped to the 6600 gallon main treatment tank for treatment. Next, the area will be rinsed using the steam jenny unit with-out detergent. The first rinse will again be pumped to the 6600 gallon treatment tank for treatment.

A second rinse will be performed, pumped to the treatment reactor and a sample of the rinse water will be collected for analysis to determine if decontamination is complete. Analytical testing for listed wastes will involve testing for the hazardous constituents for each listed waste which has been unloaded in the area. (Said constituents being identified in the waste analysis plan.)

11.00 Closure Plan and Closure Cost Estimate
(Class 2 Modification)

11.63 Evaporator/Crystallizer & Drum Storage Pad

The pads will be washed down to remove any residue soluble salts. The water will be pumped into the treatment tank, treated and the effluent evaporated. This will amount to 5,000 gallons.

The lined rain water pond soil will be analyzed for metals and also disposed of if contaminated. It is projected that there will be maximum of about 20 cubic yards of sand and soil blown in over time. All accumulated drums will be shipped off site to an appropriate site.

11.64 Sludge Processing Area

The sludge processing area consists of 2 receiving hoppers (5,000 gallons each), one dissolution tanks (2,960 gallons), 2 continuous dryers, a pug mill mixer, and 3 smaller batch dryers. After the last material is processed, the hoppers, tanks, conveyors, and dryers, and pug mill will be washed to remove all sludge residues. The floor area and sumps will then be washed. All wash water from this operation will be sent off site, since this is the last step in the overall process.

The last item to be decontaminated in this area is the scrubbers and dust collectors. All residues will be removed and placed in drums. The equipment internals will then be washed to remove the last traces.

A maximum of 5,000 gallons is estimated for this procedure. Three workers will perform this over a one week period.

11.66 PLANT SCRUBBER SYSTEM

The last equipment to be taken out of service will be the plant scrubbing system. There are two small scrubbers and the main building scrubber. The scrubber water will be pumped into containers, and all ducting and scrubber internals will be washed to remove acids or caustic materials. finally, an internal inspection will be made and any residual solids will be removed by hand. An additional wash will be conducted if needed.

The scrubbers hold approximately 600 gallons, and another 1,000 gallons of wash water is anticipated for the final washout. This will generate a total of 1,600 gallons for of site treatment and or disposal.

11.67 PROTECTIVE AND SPILL CLEAN-UP EQUIPMENT

Following the container storage area decontamination, all personnel protective equipment, and spill cleanup equipment which can not be decontaminated after the operations specified in Section 11.50 and 11.60 of this plan, will be containerized and shipped to a permitted off-site facility.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.70 FACILITY STATUS DURING CLOSURE

During the entire closure process, the facility will maintain compliance with US EPA and Nevada DEP hazardous waste regulatory standards.

11.80 CERTIFICATION OF CLOSURE

11.81 CERTIFICATION BY OWNER/OPERATOR

When closure is complete, the owner/operator will submit a signed certification to EPA that the facility has been closed in full accordance with the specifications in the approved closure plan.

11.82 CERTIFICATION BY AN ENGINEER

11.82.1 INSPECTIONS DURING CLOSURE

During the facility closure operations specified in Sections 11.50 and 11.60 of this plan, ETICAM will obtain the services of an independent registered engineer to oversee said operations. The engineer will inspect the hazardous waste inventory removal operation, inventory treatment and the facility decontamination operations to ensure they are carried out in accordance with the approved closure plan.

11.82.2 CERTIFICATION BY THE ENGINEER

When closure has been completed, the registered engineer indicated in Section 11.82.1 of this plan will submit a written certification to EPA/NDEP

that the facility has been closed in accordance with the specifications of this closure plan.

11.90 COST ESTIMATE OF CLOSURE

This section of the closure plan will assess and estimate the anticipated cost for an independent third party to close the hazardous waste treatment storage aspects of ETICAM as delineated in Section 11.50 through 11.80.

11.91 TREATMENT OF REMAINING INVENTORIES

Category (1): A maximum cost per gallon of treating all remaining hazardous waste inventories off site is $1.50/gallon including transportation.

Category (2): The maximum cost for transportation and treatment of the more dilute decontamination wash and rinse waters is $1.10/gallon.

Operation:

Total treatable inventory (from Section 11.22):

a) tanks: (category)		gallons:	
(1) -	acid solutions	67,584	
(1) -	alkali solutions	32,736	
(1) -	cyanide solutions	38,544	
(2) -	process tanks	77,636	
(2) -	treated effluent	39,600	
(1)	138,864 gal X $1.50/gal		$ 208,296
(2)	117,236 gal X $1.10/gal		$ 128,960
Total:	256,100 gallons		$ 337,256
Section 11.91 subtotal.....			$ 337,256

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.92 DECONTAMINATION ACTIVITIES

11.92.1 TRUCK UNLOADING AREA

1)	Labor; 2 workers at 15 hours each times $30/hour (includes salary taxes and fringe benefits)	$ 900
2)	Absorbent, 5 bags at $10.00	50
3)	Two empty open top drums at $25. drum	50
4)	Disposal of two drums contaminated absorbent at $62.50/ drum	125
5)	Steam jenny rental $ 100/day for 2 days	200
6)	Lab testing of second rinse waters 2 samples at $150/ sample	300
7)	Treatment of wash and rinse waters from decontamination 400 gallons x $1.10/gallon	440
	Subsection 11.92.1 Subtotal	$ 2,015

11.92.2 TANKS, PUMPS, PIPING AND AUXILIARY EQUIPMENT DECONTAMINATION

1)	Labor, 4 workers at 70 hours each times $ 30/hour	$ 8,400
2)	Steam jenny rental two units at $ 100/day for 9 days	1,800
3)	Lab testing of second rinse waters: 7 samples at $150/sample	1,050
4)	Treatment of wash and rinse water from decontamination 20,000 gallons x $1.10/gallon ...	22,000

5) Disposal of wash and rinse waters and any residual treatment sludges and salt residue from final evaporation from last stages of tank decontamination (refer to 11.62)-880 gallons (16 drums) of combined sludge and wash water at $62.50/drum for transportation and disposal 1,000

6) Disposal of three drums contaminated personal protective equipment at $62.50/drum 187

Subsection 11.92.2 Subtotal ..... $ 34,437

11.92.3 DISPOSAL OF RESIDUE DRUMS & POND DIRT

1) Transferring drums into bulk trailer: 2 men and fork lift for 8 hours per 19 ton load. Forklift at $ 500/wk ($100/day) plus 16 hrs labor at $ 30/hr = 1,540 tons at $ 31/ton
Total cost ..... $ 47,740

2) Transportation and disposal of 4,400 drums at average wt of 700 # = 1,540 tons and average cost of $ 285.50/ton for trans and disposal ..... $ 439,670

3) 20 tons of pond dirt
2 men @ 30/hr plus
loader @ 50/hr for 8 hrs ..... $ 880

4) Disposal of 20 tons
at 287.50/ton ..... $ 5,710

Subsection 11.92.3 subtotal ..... $ 494,000

11.92.4 SLUDGE HANDLING AREA

1) Transportation and disposal of 40 tons at 285.50/ton ..... $ 11,420

2) Washwater treatment for 5,000 gallons at $ 1.10/gal ..... $ 5,500

3) 70 hours for 3 workers at $ 30/hr . 6,300

4) 5 samples at $ 150	750
Subsection 11.92.4 subtotal	$ 23,970

11.92.5 PLANT SCRUBBER SYSTEM

1) 1,600 gallons of scrubber water and wash water	$ 1,760
2) 40 hours for three workers at $ 30/hr	3,600
Subsection 11.92.5 subtotal	$ 5,360

11.92.6 SUPERVISION AND CERTIFICATION BY REGISTERED ENGINEER

1) Periodic inspection during closure activities by an independent engineer, 20 hours x $65/hour	$ 1,300
2) Preparation of certification of closure, 2 hours at $65/hour	130
Subsection 11.92.6 Subtotal	$ 1,430

11.93 CONTINGENCIES

The sum of costs in Sections 11.91 through 11.92.6 ..... $ 898,468

A 10% provision is made for contingencies that may arise during closure operations. Although all attempts have been made to include all possible closure costs, this 10% provision has been added to account for any anticipated contingencies

..... $ 89,847

11.94 CURRENT ESTIMATED CLOSURE-COST = OCT 1989

The total closure cost is therefore the sum of costs in Section 11.91 through 11.93 which is

..... $ 988,315

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.95 ADJUSTMENTS TO CLOSURE COST

Each year (i.e., October) ETICAM will adjust the closure cost estimate by recalculating the cost of closure in current dollars, or by using an inflation factor derived from the most recent Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its "*Survey of Current Business*", as specified in paragraphs (b)(1) and (2) of 40 CFR 264.142 as follows:.

"(1) The first adjustment is made by multiplying the closure cost estimate by the inflation factor. The result is the adjusted closure cost estimate."

"(2) Subsequent adjustments are made by multiplying the latest adjusted closure cost estimate by the latest inflation factor."

11.100 AMENDMENT OF PLAN

This closure plan and closure cost estimate will be amended from time to time during the active life of the facility whenever changes in operating conditions, permit modifications, anticipated year of closure, or any of the information in this plan substantially changes. This amendment must be submitted as part of any permit modification submission, or within 60 days of any changes requiring the amendment but not requiring a permit modification.

11.00 Closure Plan and Closure Cost Estimate
(Class 2 Modification)

CALCULATIONS

Disposal of salt and sludge residue:

1) Cost for loading bulk trailers or roll off hoppers:

19 tons per trailer

700 # net per drum = 54 drums

4,400 drums x 700 pounds = 3,080,000 #

= 1,540 tons

Two men 8 hours with lift truck to load 19 tons
Labor rate = $ 30/hr, lift truck rental = $ 500 per week, or $ 100 per day of loading.

Cost per ton = $ 580 / 19 tons = $ 30.53/ton

2) Transportation:

Hauling cost = $ 1,575 per trip

/ 19 tons = $ 83 / ton

3) Stabilization/Disposal

Note: Cost = 100/ton if salt is not listed waste

Expected that one half will require stabilization at $305 per ton, and other half will meet treatment standards at disposal cost of $ 100 per ton.

Average cost for stabilization/disposal = $202.50/ton

Total Cost for transferring, transportation and disposal

= $ 316.03 / ton

ADDITIONS

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

ADDITIONS & REVISIONS HIGHLIGHTED

11.10 INTRODUCTION

11.11 GENERAL

This plan describes how ETICAM will close its hazardous waste treatment and storage facility in a manner that:

- Minimizes the need for further maintenance and
- Controls, minimizes or eliminates post-closure escape of hazardous waste, hazardous constituents, or waste decomposition products to the ground, or to surface waters or to the atmosphere.

This plan sets forth all of the steps required to be taken by ETICAM to properly and completely close its hazardous waste storage facility. These steps include:

1. - A description of how and when the facility will be partially (if applicable) and ultimately closed.
2. - An estimate of the maximum inventory of wastes in storage at any given time.
3. - A description of the steps needed to decontaminate hazardous waste equipment during closure.
4. - A schedule for final closure.
5. - Certification requirements by an independent registered engineer.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.20 HAZARDOUS WASTES STORED AT ETICAM

11.21 DESCRIPTION AND LIST OF WASTES

ETICAM is a hazardous waste treatment and storage facility located at 2095 Newlands Drive East in Fernley, Nevada.

The facility accepts, stores and treats various materials which are considered to be hazardous wastes as described in its Part B Hazardous Waste Permit.

The facility stores and treats hazardous wastes in tanks and containers. Generally, wastes stored in tanks are aqueous and are processed through the facility's treatment systems. Containerized waste includes liquids, sludges, and residual salts from the evaporation of treated effluent. The following is a general breakdown of the categories of wastes accepted at ETICAM:

Waste Category	EPA Waste Code	EPA Process Code
1) Metal Containing Liquids and Sludges	F006, F008 D006, D007 D008, D011	S01, S02 T01, T04
2) Cyanide Bearing solutions; plating solutions (non-cyanide) Includes precious metal solutions	F007, F009 D002, D003	S01, S02 T01
3) Other corrosives; acids, alkalis, plating & stripping solutions (non cyanide), Includes precious metal solns.	D002	S01, S02 T01

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.22 MAXIMUM INVENTORY

The estimated maximum inventory of hazardous waste and treated effluent in storage/treatment at any given time at the facility is based on the maximum tank volume as follows:

Tank Inventory:

No. & Volume	Contents:	Maximum Inventory:
4- 6,600 gal 13-3,168 gal	acid solutions	67,584 gal
4- 6,600 gal 2- 3,168 gal	alkali solutions	32,736 gal
3- 7,292 gal 2- 8,140 gal 2- 3,830 gal 2- 7,160 gal 2- 7,000 gal 1- 3,500 gal	process tanks	77,636 gal
6- 6,600 gal	treated effluent	39,600 gal
2- 6,600 gal 8- 3,168 gal	cyanide solutions	38,544 gal
2- 5,000 gal	sludge receiving	10,000 gal
	Sub Total	266,100 gal

Container Inventory:

4,400 drums (55 gal)	Sludges or Salts (evaporation residue)	242,000 gal

Total Inventory at Closure (Max) ..... 508,100 gals.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.30 CLOSURE SCHEDULE

The following schedule includes anticipated dates when wastes will no longer be accepted, treated or stored at ETICAM, and intervening closure milestone dates which will allow tracking of the progress of closure.

Closure Event:	Anticipated Completion Date:
1) Waste no longer accepted, stored or treated.	Year 2035 A.D.
2) Notify EPA/NDEP of the Closure Initiation Date.	180 days before date of initiation of closure
3) Final shipment of waste accepted.	Closure initiation date
4) * Decontaminate loading/ unloading areas and all floor and tank containment areas subject to spills and test rinse waters.	Within 70 days of closure initiation date
5) * Treat all remaining inventories of waste on site and decontamination wastes.	Within 85 days of closure initiation date
6) * Decontaminate all tanks, piping, pumps, filters.	Within 110 days of closure initiation date
7) * Treat all tank decontamination rinse waters.	Within 120 days of closure initiation date
8) * Ship all containers of sludges and salts, drums of contaminated absorbent and personal protective equipment to permitted off site facilities.	Within 130 days of closure initiation date
9) * Decontaminate storage pads.	
10) Submit certifications of closure to EPA/NDEP by owner/operator and a registered prof. engineer.	Within 140 days of closure initiation date

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11) Invite EPA/NDEP to review closure.	Within 150 days of closure initiation date
12) Closure complete.	Within 180 days of closure initiation date

* All items above marked with an asterisk are closure steps requiring inspection and/or supervision by an independent registered professional engineer.

11.40 NOTIFICATION OF INTENT TO CLOSE

At least 180 days before the date closure is to begin, ETICAM will notify EPA and the Nevada DEP of the exact date it intends to initiate closure. In the event that amendments are required to the closure plan, said amendments will be submitted to EPA/NDEP along with the aforementioned notification of closure initiation date. If EPA/NDEP does not approve the plan or requires it to be modified, ETICAM will submit a new or modified plan to EPA/NDEP within 30 days of the date of such notification by EPA/NDEP.

11.50 REMOVAL AND/OR TREATMENT OF HAZARDOUS WASTE INVENTORIES

This section of the closure plan will describe how all hazardous waste at the facility will either be shipped off-site to a permitted facility or treated on-site. All of the actions indicated in this section will be completed within 90 days of the closure initiation.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.51 SHIPMENT OFF-SITE

Following decontamination activities specified in this plan, ETICAM will ship all inventories of hazardous wastes and residues which cannot be treated on-site to permitted off-site facility(ies). This is expected to consist only of salt residues from the evaporator/crystallizer. Said removal of wastes will be completed within 90 days of initiation of closure as indicated in Section 11.50.

All transporters will possess hazardous waste transporter licenses in Nevada and all intermediate states, and will have obtained an EPA identification number. All off-site facilities utilized will be fully permitted to accept the waste shipped.

11.52 TREATMENT OF REMAINING INVENTORIES

All remaining inventories (including the decontamination wash and rinse waters from the container storage areas and tank cleaning) will be treated on-site through the treatment systems. However, the closure cost estimate is based on off-site disposal of all liquids, sludges, and salts by a third party.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.60 DECONTAMINATION OF HAZARDOUS WASTE STORAGE/TREATMENT AREAS

This section of the closure plan will describe how facility equipment and structures used to manage hazardous wastes will be decontaminated.

11.61 TANKS, PUMPS AND PIPING

Once all non-treatable waste has been shipped off-site and all treatable waste has been processed, the empty treatment/storage tanks will be decontaminated one by one. All tank interior surfaces, will be thoroughly washed with a high pressure steam jenny cleaning unit containing a detergent solution. All wash water will be pumped to the 6600 gallon main treatment tank for appropriate treatment. Following the washing operation, each tank interior will be rinsed using the high pressure steam jenny unit without detergent. This first rinse will also be pumped to the above tanks for treatment. A second rinse will be performed and a composite sample of the rinse water will be collected for analysis to determine if decontamination is complete. Analytical testing for listed wastes will involve testing for the hazardous constituents for each listed waste previously stored in a particular area being decontaminated (said constituents being identified in the waste analysis plan; particularly for cyanide and metals. Following tank decontamination, the filter

presses will be cleaned using the steam jenny unit by applying one detergent wash and two rinses. The second rinse will again be sampled and tested as previously described to insure decontamination is complete. During the tank decontamination procedures, all of the pumps and piping in the facility should have been adequately washed and rinsed. Any pumps and piping not already cleaned will be decontaminated by pumping through a clean water and detergent solution equal to three times the interior capacity of the line to be cleaned. This wash will be followed by two rinses of clean water. All wash and rinse waters from the filter presses, pumps, piping, clarifiers and auxiliary equipment decontamination at facility will be pumped to the 6600 gallon main treatment tank for treatment. Following tank pipe decontamination, all tank area secondary containment structures will be cleaned and decontaminated using one wash and one rinse from the high pressure steam jenny unit. It is estimated that 10,000 gallons of wash and rinse water will be generated from the tank, pumps, piping and auxiliary equipment decontamination.

During the last stages of decontamination operations, only the main 6600 gallon treatment tank, one of the clarifiers and intermediate pumps and piping will be operational. Any sludge generated will be container-

ized directly from the filters for shipment off-site. Final washing and rinsing of the 6600 gallon tank and the filters will be completed with the resultant waters evaporated and the salt residue containerized for off site disposal. It is estimated that 4 drums (220 gal) of sludge will be generated from treatment of all decontamination wash and rinse waters.

11.62 TRUCK UNLOADING AREA DECONTAMINATION

Unloading area decontamination will be carried out in much the same way as tank and containment area decontamination. First, the entire area will be washed with the steam jenny containing a detergent solution. The wash water will be pumped to the 6600 gallon main treatment tank for treatment. Next, the area will be rinsed using the steam jenny unit with-out detergent. The first rinse will again be pumped to the 6600 gallon treatment tank for treatment.

A second rinse will be performed, pumped to the treatment reactor and a sample of the rinse water will be collected for analysis to determine if decontamination is complete. Analytical testing for listed wastes will involve testing for the hazardous constituents for each listed waste which has been unloaded in the area. (Said constituents being identified in the waste analysis plan.)

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.63 Evaporator/Crystallizer & Drum Storage Pad

The pads will be washed down to remove any residue soluble salts. The water will be pumped into the treatment tank, treated and the effluent evaporated. This will amount to 5,000 gallons.

The lined rain water pond soil will be analyzed for metals and also disposed of if contaminated. It is projected that there will be maximum of about 20 cubic yards of sand and soil blown in over time. All accumulated drums will be shipped off site to an appropriate site.

11.64 Sludge Processing Area

The sludge processing area consists of 2 receiving hoppers (5,000 gallons each), one dissolution tanks (2,960 gallons), 2 continuous dryers, a pug mill mixer, and 3 smaller batch dryers. After the last material is processed, the hoppers, tanks, conveyors, and dryers, and pug mill will be washed to remove all sludge residues. The floor area and sumps will then be washed. All wash water from this operation will be sent off site, since this is the last step in the overall process.

The last item to be decontaminated in this area is the scrubbers and dust collectors. All residues will be removed and placed in drums. The equipment internals will then be washed to remove the last traces.

A maximum of 5,000 gallons is estimated for this procedure. Three workers will perform this over a one week period.

11.66 PLANT SCRUBBER SYSTEM

The last equipment to be taken out of service will be the plant scrubbing system. There are two small scrubbers and the main building scrubber. The scrubber water will be pumped into containers, and all ducting and scrubber internals will be washed to remove acids or caustic materials. finally, an internal inspection will be made and any residual solids will be removed by hand. An additional wash will be conducted if needed.

The scrubbers hold approximately 600 gallons, and another 1,000 gallons of wash water is anticipated for the final washout. This will generate a total of 1,600 gallons for of site treatment and or disposal.

11.67 PROTECTIVE AND SPILL CLEAN-UP EQUIPMENT

Following the container storage area decontamination, all personnel protective equipment, and spill cleanup equipment which can not be decontaminated after the operations specified in Section 11.50 and 11.60 of this plan, will be containerized and shipped to a permitted off-site facility.

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.70 FACILITY STATUS DURING CLOSURE

During the entire closure process, the facility will maintain compliance with US EPA and Nevada DEP hazardous waste regulatory standards.

11.80 CERTIFICATION OF CLOSURE

11.81 CERTIFICATION BY OWNER/OPERATOR

When closure is complete, the owner/operator will submit a signed certification to EPA that the facility has been closed in full accordance with the specifications in the approved closure plan.

11.82 CERTIFICATION BY AN ENGINEER

11.82.1 INSPECTIONS DURING CLOSURE

During the facility closure operations specified in Sections 11.50 and 11.60 of this plan, ETICAM will obtain the services of an independent registered engineer to oversee said operations. The engineer will inspect the hazardous waste inventory removal operation, inventory treatment and the facility decontamination operations to ensure they are carried out in accordance with the approved closure plan.

11.82.2 CERTIFICATION BY THE ENGINEER

When closure has been completed, the registered engineer indicated in Section 11.82.1 of this plan will submit a written certification to EPA/NDEP

that the facility has been closed in accordance with the specifications of this closure plan.

11.90 COST ESTIMATE OF CLOSURE

This section of the closure plan will assess and estimate the anticipated cost for an independent third party to close the hazardous waste treatment storage aspects of ETICAM as delineated in Section 11.50 through 11.80.

11.91 TREATMENT OF REMAINING INVENTORIES

Category (1): A maximum cost per gallon of treating all remaining hazardous waste inventories off site is $1.50/gallon including transportation.

Category (2): The maximum cost for transportation and treatment of the more dilute decontamination wash and rinse waters is $1.10/gallon.

Operation:

Total treatable inventory (from Section 11.22):

a) tanks:

(category)		gallons:
(1) -	acid solutions	67,584
(1) -	alkali solutions	32,736
(1) -	cyanide solutions	38,544
(2) -	process tanks	77,636
(2) -	treated effluent	39,600

(1) 138,864 gal X $1.50/gal ..... $ 208,296

(2) 117,236 gal X $1.10/gal ..... $ 128,960

Total: 256,100 gallons ..... $ 337,256

Section 11.91 subtotal..... $ 337,256

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.92 DECONTAMINATION ACTIVITIES

11.92.1 TRUCK UNLOADING AREA

1) Labor; 2 workers at 15 hours each times $30/hour (includes salary taxes and fringe benefits) ..... $ 900

2) Absorbent, 5 bags at $10.00 50

3) Two empty open top drums at $25. drum 50

4) Disposal of two drums contaminated absorbent at $62.50/drum 125

5) Steam jenny rental $ 100/day for 2 days 200

6) Lab testing of second rinse waters 2 samples at $150/sample 300

7) Treatment of wash and rinse waters from decontamination 400 gallons x $1.10/gallon 440

Subsection 11.92.1 Subtotal ..... $ 2,015

11.92.2 TANKS, PUMPS, PIPING AND AUXILIARY EQUIPMENT DECONTAMINATION

1) Labor, 4 workers at 70 hours each times $ 30/hour ..... $ 8,400

2) Steam jenny rental two units at $ 100/day for 9 days 1,800

3) Lab testing of second rinse waters: 7 samples at $150/sample 1,050

4) Treatment of wash and rinse water from decontamination 20,000 gallons x $1.10/gallon ... 22,000

5) Disposal of wash and rinse waters and any residual treatment sludges and salt residue from final evaporation from last stages of tank decontamination (refer to 11.62)-880 gallons (16 drums) of combined sludge and wash water at $62.50/drum for transportation and disposal 1,000

6) Disposal of three drums contaminated personal protective equipment at $62.50/drum 187

Subsection 11.92.2 Subtotal ..... $ 34,437

11.92.3 DISPOSAL OF RESIDUE DRUMS & POND DIRT

1) Transferring drums into bulk trailer: 2 men and fork lift for 8 hours per 19 ton load. Forklift at $ 500/wk ($100/day) plus 16 hrs labor at $ 30/hr = 1,540 tons at $ 31/ton
Total cost ..... $ 47,740

2) Transportation and disposal of 4,400 drums at average wt of 700 # = 1,540 tons and average cost of $ 285.50/ton for trans and disposal ..... $ 439,670

3) 20 tons of pond dirt 2 men @ 30/hr plus loader @ 50/hr for 8 hrs ..... $ 880

4) Disposal of 20 tons at 287.50/ton ..... $ 5,710

Subsection 11.92.3 subtotal ..... $ 494,000

11.92.4 SLUDGE HANDLING AREA

1) Transportation and disposal of 40 tons at 285.50/ton ..... $ 11,420

2) Washwater treatment for 5,000 gallons at $ 1.10/gal ..... $ 5,500

3) 70 hours for 3 workers at $ 30/hr . 6,300

4) 5 samples at $ 150	750
Subsection 11.92.4 subtotal	$ 23,970

11.92.5 PLANT SCRUBBER SYSTEM

1) 1,600 gallons of scrubber water and wash water	$ 1,760
2) 40 hours for three workers at $ 30/hr	3,600
Subsection 11.92.5 subtotal	$ 5,360

11.92.6 SUPERVISION AND CERTIFICATION BY REGISTERED ENGINEER

1) Periodic inspection during closure activities by an independent engineer, 20 hours x $65/hour	$ 1,300
2) Preparation of certification of closure, 2 hours at $65/hour	130
Subsection 11.92.6 Subtotal	$ 1,430

11.93 CONTINGENCIES

The sum of costs in Sections 11.91 through 11.92.6 ..... $ 898,468

A 10% provision is made for contingencies that may arise during closure operations. Although all attempts have been made to include all possible closure costs, this 10% provision has been added to account for any anticipated contingencies

..... $ 89,847

11.94 CURRENT ESTIMATED CLOSURE-COST = OCT 1989

The total closure cost is therefore the sum of costs in Section 11.91 through 11.93 which is

..... $ 988,315

11.00 Closure Plan and Closure Cost Estimate (Class 2 Modification)

11.95 ADJUSTMENTS TO CLOSURE COST

Each year (i.e., October) ETICAM will adjust the closure cost estimate by recalculating the cost of closure in current dollars, or by using an inflation factor derived from the most recent Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its "*Survey of Current Business*", as specified in paragraphs (b)(1) and (2) of 40 CFR 264.142 as follows:.

"(1) The first adjustment is made by multiplying the closure cost estimate by the inflation factor. The result is the adjusted closure cost estimate."

"(2) Subsequent adjustments are made by multiplying the latest adjusted closure cost estimate by the latest inflation factor."

11.100 AMENDMENT OF PLAN

This closure plan and closure cost estimate will be amended from time to time during the active life of the facility whenever changes in operating conditions, permit modifications, anticipated year of closure, or any of the information in this plan substantially changes. This amendment must be submitted as part of any permit modification submission, or within 60 days of any changes requiring the amendment but not requiring a permit modification.

11.00 Closure Plan and Closure Cost Estimate
(Class 2 Modification)

CALCULATIONS

Disposal of salt and sludge residue:

1) Cost for loading bulk trailers or roll off hoppers:

19 tons per trailer

700 # net per drum = 54 drums

4,400 drums x 700 pounds = 3,080,000 #

= 1,540 tons

Two men 8 hours with lift truck to load 19 tons
Labor rate = $ 30/hr, lift truck rental = $ 500 per week, or $ 100 per day of loading.

Cost per ton = $ 580 / 19 tons = $ 30.53/ton

2) Transportation:

Hauling cost = $ 1,575 per trip

/ 19 tons = $ 83 / ton

3) Stabilization/Disposal

Note: Cost = 100/ton if salt is not listed waste

Expected that one half will require stabilization at $305 per ton, and other half will meet treatment standards at disposal cost of $ 100 per ton.

Average cost for stabilization/disposal = $202.50/ton

Total Cost for transferring, transportation and disposal

= $ 316.03 / ton

DELETIONS

ATTACHMENT 6

CLOSURE PLAN

Copy of
Original Permit
Issued December 24, 1986

Deletions underlined in red

Prepared July 11, 1990

11.00 HAZARDOUS WASTE
CLOSURE PLAN AND CLOSURE COST ESTIMATE

ETICAM
Fernley, Nevada

11.10 INTRODUCTION

11.11 General

The purpose of this plan is to describes how ETICAM will close its hazardous waste treatment and storage facility in a manner that:

- Minimizes the need for further maintenance and
- Controls, minimizes or eliminates post-closure escape of hazardous waste, hazardous constituents, or waste decomposition products to the ground, or to surface waters or to the atmosphere.

This plan sets forth all of the steps required to be taken by ETICAM to properly and completely close its hazardous waste storage facility. These steps include:

- A description of how and when the facility will be partially, if applicable, and ultimately closed.

wastes in storage at any given time.

- A description of the steps needed to decontaminate hazardous waste equipment during closure.
- A schedule for final closure.
- Certification requirements by an independent registered engineer.

11.20 HAZARDOUS WASTES STORED AT ETICAM

11.21 DESCRIPTION AND LIST OF WASTES

ETICAM is a hazardous waste treatment and storage facility located at 2095 Newlands Drive East in Fernley, Nevada.

The facility accepts, stores and treats various materials which are considered to be hazardous wastes as described in its Part A Hazardous Waste Permit application, which can be found in Appendix A.

Very briefly, the facility stores and treats hazardous wastes in tanks. Generally, wastes stored in tanks are aqueous and are processed through the facility's treatment systems.

The following is a general breakdown of the categories of wastes accepted at ETICAM:

	Waste Category	Typical EPA Waste Code	Typical EPA Process Code
1)	Metal Containing Sludges (hydroxide)	F006, F008 D006, D007 D008, D011	S01, S02 T01, T04
2)	Cyanide Bearing solutions; plating & stripping baths, etc.; Includes precious metal cyanide solutions	F007, F009 D003	S01, S02 T01
3)	Other corrosives; acids, alkalis, plating & stripping solutions (non-cyanide); Includes precious metal solutions	D002	S01, S02 T01

11.22 MAXIMUM INVENTORY

The estimated maximum inventory of hazardous waste in storage/treatment at any given time at ETICAM is as follows:

Tanks:	Content:	Maximum Inventory
4-6600 gal. 8-3168 gal.	acid solutions	51,744 gals.
4-6600 gal. 2-3168 gal.	alkali solutions	32,736 gals.
3-6600 gal. 2-7920 gal.	process tanks	35,640 gals.
2-6600 gal. 8-3168 gal.	cyanide solutions	38,544 gals.

Total Inventory at Closure ..... 158,664 gals.

11.30 CLOSURE SCHEDULE

The following schedule includes anticipated dates when wastes will no longer be accepted, treated or stored at ETICAM, and intervening closure milestone dates which will allow tracking of the progress of closure.

Closure Event	Anticipated Completion Date
1) Waste no longer accepted, stored or treated.	Year 2035 A.D.
2) Notify EPA/NDEP of the Closure Initiation Date.	180 days before date of initiation of closure
3) Final shipment of waste accepted.	Closure initiation date
4) *Decontaminate loading/ unloading areas and all floor and tank containment areas subject to spills and test rinse waters.	Within 70 days of closure initiation date
5) *Treat all remaining inventories of waste on-site and decontamination wastes	Within 85 days of closure initiation date
6) *Decontaminate all tanks, piping, pumps, filters.	Within 110 days of closure initiation date
7) *Treat all tank decontamination rinse waters.	Within 120 days of closure initiation date
8) *Ship all drums of sludges from final treatment and drums of contaminated, absorbent and personal protective equipment to permitted off-site facilities.	Within 130 days of closure initiation date
9) Submit closure certifications to EPA/NDEP by owner/operator and a registered professional engineer.	Within 140 days of closure initiation date

10)	Invite EPA/NDEP to review closure.	Within 150 days of closure initiation date
11)	Closure complete.	Within 180 days of closure initiation date

*All items above marked with an asterisk are closure steps requiring inspection and/or supervision by an independent registered professional engineer.

11.40 NOTIFICATION OF INTENT TO CLOSE

At least 180 days before the date closure is to begin, ETICAM will notify EPA and the Nevada DEP of the exact date it intends to initiate closure. In the event that amendments are required to the closure plan, said amendments will be submitted to EPA/NDEP along with the aforementioned notification of closure initiation date. If EPA/NDEP does not approve the plan or requires it to be modified, FBI will submit a new or modified plan to EPA/NDEP within 30 days of the date of such notification by EPA/NDEP.

11.50 REMOVAL AND/OR TREATMENT OF HAZARDOUS WASTE INVENTORIES

This section of the closure plan will describe how all hazardous waste at the facility will either be shipped off-site to a permitted facility or treated on-site. All of the actions indicated in this section will be completed within 90 days of the closure initiation date.

Following decontamination activities specified in this plan, FTICAM will ship all inventories of hazardous wastes which cannot be treated on-site to permitted off-site facility(ies). This is expected to consist only of final wash and rinse waters from the main treatment tank and one clarifier. Said removal of wastes will be completed within 90 days of initiation of closure as indicated in Section 11.50.

All transporters used will possess hazardous waste transporter licenses in Nevada and all intermediate states, and will have obtained an EPA identification number. All off-site facilities utilized will be fully permitted to accept the waste shipped.

11.52 TREATMENT OF REMAINING INVENTORIES

All remaining inventories (including the decontamination wash and rinse waters from the container storage area and tank cleaning) will be treated on-site through the treatment systems.

11.60 DECONTAMINATION OF HAZARDOUS WASTE STORAGE/TREATMENT AREAS

This section of the closure plan will describe how facility equipment and structures used to manage hazardous wastes will be decontaminated.

~~11.02 TANKS, PUMPS AND PIPING~~

Once all non-treatable waste has been shipped off-site and all treatable waste has been processed, the empty treatment/storage tanks will be decontaminated one by one. All tank interior surfaces, will be thoroughly washed with a high pressure steam jenny cleaning unit containing a detergent solution. All wash water will be pumped to the 6600 gallon main treatment tank for appropriate treatment. Following the washing operation, each tank interior will be rinsed using the high pressure steam jenny unit without detergent. This first rinse will also be pumped to the above tanks for treatment. A second rinse will be performed and a composite sample of the rinse water will be collected for analysis to determine if decontamination is complete. Analytical testing for listed wastes will involve testing for the hazardous constituents for each listed waste previously stored in a particular area being decontaminated (said constituents being identified in Appendix VII of 40 CFR 261). Following tank decontamination, the filter presses will be cleaned using the steam jenny unit by applying one detergent wash and two rinses. The second rinse will again be sampled and tested as previously described to insure decontamination is complete.

During the tank decontamination procedures, all of the pumps and piping in the facility should have been adequately washed and rinsed. Any pumps and piping not already cleaned will be decontaminated by pumping through a clean water and detergent solution equal to three times the interior capacity of the line to be cleaned. This wash will be followed by two rinses of clean water. All wash and rinse waters from the filter presses, pumps, piping, clarifiers and auxiliary equipment decontamination at the facility will be pumped to the 6600 gallon main treatment tank for treatment. Following tank and piping decontamination, all tank area secondary containment structures will be cleaned and decontaminated using one wash and one rinse from the high pressure steam jenny unit. It is estimated that 10,000 gallons of wash and rinse water will be generated from the tank, pumps, piping and auxiliary equipment decontamination.

During the last stages of decontamination operations, only the main 6600 gallon treatment tank, one of the clarifiers and intermediate pumps and piping will be operational. Any sludge generated will be containerized directly from the clarifier for shipment off-site. Final washing and rinsing of the 6600 gallon tank and

the clarifier will be completed with the resultant waters collected in a vacuum truck and transported off-site to a permitted facility. It is estimated that 500 gallons of wash and rinse waters will be generated from this last phase of tank decontamination. It is estimated that approximately 200 gallons of sludge will also be generated from treatment of all decontamination wash and rinse waters.

11.62 TRUCK UNLOADING AREA DECONTAMINATION

Unloading area decontamination will be carried out in much the same way as tank and containment area decontamination. First, the entire area will be washed with the steam jenny ~~until~~ containing a detergent solution. The wash water will be pumped to the 6600 gallon main treatment tank for treatment. Next, the area will be rinsed using the steam jenny unit without detergent. The first rinse will again be pumped to the 6600 gallon treatment tank for treatment. A second rinse will be performed and a sample of the rinse water will be collected for analysis to determine if decontamination is complete. Analytical testing for listed wastes will involve testing for the hazardous constituents for each listed waste which has been unloaded in the area. (Said constituents being identified in Appendix VII of 40 CFR 261.)

11.63 PROTECTIVE AND SPILL CLEAN-UP EQUIPMENT

Following the container storage area decontamination, all personnel protective equipment, and spill cleanup equipment which have become contaminated during the operations specified in Section 11.50 and 11.60 of this plan, will be containerized and shipped to a permitted off-site facility.

11.70 FACILITY STATUS DURING CLOSURE

During the entire closure process, the facility will maintain compliance with US EPA and Nevada DEP hazardous waste regulatory status standards.

11.80 CERTIFICATION OF CLOSURE

11.81 CERTIFICATION BY OWNER/OPERATOR

When closure is complete, the owner/operator will submit a signed certification to EPA that the facility has been closed in full accordance with the specifications in the approved closure plan.

11.82 CERTIFICATION BY AN ENGINEER

11.82.1 INSPECTIONS DURING CLOSURE

During the facility closure operations specified in Sections 11.50 and 11.60 of this plan, ETICAM will obtain the services of an independent registered engineer to oversee said

The engineer will inspect the hazardous waste inventory removal operation, inventory treatment and the facility decontamination operations to ensure they are carried out in accordance with the approved closure plan.

11.82.2 CERTIFICATION BY THE ENGINEER

When closure has been completed, the registered engineer indicated in Section 11.82.1 of this plan will submit a written certification to EPA/NDEP that the facility has been closed in accordance with the specifications in the approved closure plan.

11.90 COST ESTIMATE OF CLOSURE

This section of the closure plan will assess and estimate the anticipated cost of closing the hazardous waste treatment storage aspects of ETICAM as delineated in Sections 11.50 through 11.80.

11.91 TREATMENT OF REMAINING INVENTORIES

A maximum cost per gallon of treating all remaining hazardous waste inventories is $0.25/gallon. The maximum cost for treatment of the more dilute decontamination wash and rinse waters is $0.10/gallon. These figures represent costs for treating wastes on-site as actually

computed from past experience at similar facilities. They includes all costs associated with treatment, including labor, fringe benefits, utilities, feedstock chemicals, overhead and administration.

Operation:

Total treatable inventory (from Section 11.22):

a) tanks:

- acid solutions	51,744 gallons
- alkali solutions	32,736 gallons
- cyanide soltuions	38,544 gallons
- process waters	35,640 gallons

Total: 158,664 gallons x $0.25/gallon.....$39,666.00

Section 11.91 subtotal.....$39,666.00

11.92 DECONTAMINATION ACTIVITIES

11.92.1 TRUCK UNLOADING AREA

1) Labor, 2 workers at 15 hours each times $15/hour (includes salary taxes and fringe benefits).....$450.00

2) Absorbent, say 5 bags at $4.10/bag (actual price)..... 20.50

3) Two empty open top drums at $15 drum (actual price)..... 30.00

4) Disposal of two drums contaminated absorbent at $90/drum 180.00

5) Steam jenny rental including detergent, $50/day (actual price) for 2 days..... 100.00

6) Lab testing of second rinse waters--say 1 sample at $150/sample..... 150.00

7) Treatment of wash and rinse waters from decontamination 375 gallons x $0.10/gallon..... 37.50

Subsection 11.92.1 Subtotal..... $968.00

11.92.2 TANKS, PUMPS, PIPING AND AUXILIARY EQUIPMENT DECONTAMINATION

1) Labor, 4 workers at 56 hours each times $15/hour.....$3,360.00

2) Steam jenny rental two units at $50/day for seven days..... 700.00

3) Lab testing of second rinse waters--say five samples at $150/sample..... 750.00

4) Treatment of wash and rinse water from decontamination 10,000 gallons x $0.10/gallon.... 1,000.00

5) Disposal of wash and rinse waters and any residual treatment sludges from last stages of tank decontamination (refer to 11.62)--700 gallons of combined sludge and wash water at $0.40/gallon for disposal plus $350 transportation..... 630.00

6) Disposal of three drums contaminated personal protective equipment at $90/drum 270.00

Subsection 11.92.2 Subtotal.....$6,710.00

11.92.3 SUPERVISION AND CERTIFICATION BY REGISTERED ENGINEER

1) Periodic inspection during closure activities by an independent engineer, 20 hours x $45/hour..... $900.00

2) Preparation of certification of closure, 1 hour at $45/hour..... 45.00

Subsection 11.92.3 Subtotal..... $945.00

11.94 CONTINGENCIES

The sum of costs in Sections 11.91 through 11.92.6 11.92.3 is: $48,289.00

A 15% provision is made for contingencies that may arise during closure operations. Although all attempts have been made to include all possible closure costs, this 15% provision has been added to account for any anticipated contingencies.....$7,243.35

11.94 CURRENT TOTAL CLOSURE-COST = FEBRUARY 1985

The total closure cost is therefore the sum of costs in Section 11.91 through 11.93 which is $55,532.35.

Each year (i.e., February) ETICAM will adjust the closure cost estimate by employing an annual Implicit Price Deflator for Gross National Product as published by the U. S. Department of Commerce in its "Survey of Current Business", as described in 40 CFR 264.142 (c).

11.100 - AMENDMENT OF PLAN

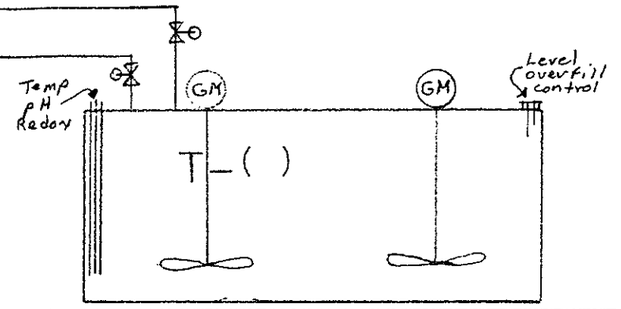
This closure plan and closure cost estimate will be amended from time to time during the active life of the facility whenever changes in operating conditions, permit modifications, anticipated year of closure, or any of the information in this plan substantially changes. Said amendment must be submitted as part of

any permit modification submission, or within 60 days of any changes requiring said amendment but not requiring a permit modification.

TRUCK BAY

STORAGE BAY

DETOX



New Piping

Level Detection

overFill control

(Existing)

(Existing)

(Existing)

(Existing)

VALVE — — — — — ⋈

SOLINOID VALVE — ⋈GM

DIAPHRAM PUMP — — ◇

ELECTRIC PUMP — — ⊖

Bryan P. Bradley
7/11/92

ETICAM

TYPICAL CROSS-SECTION OF TANKS AND PIPING

2-17-90

by Jim Bosley

Dwg # 100

ETICAM

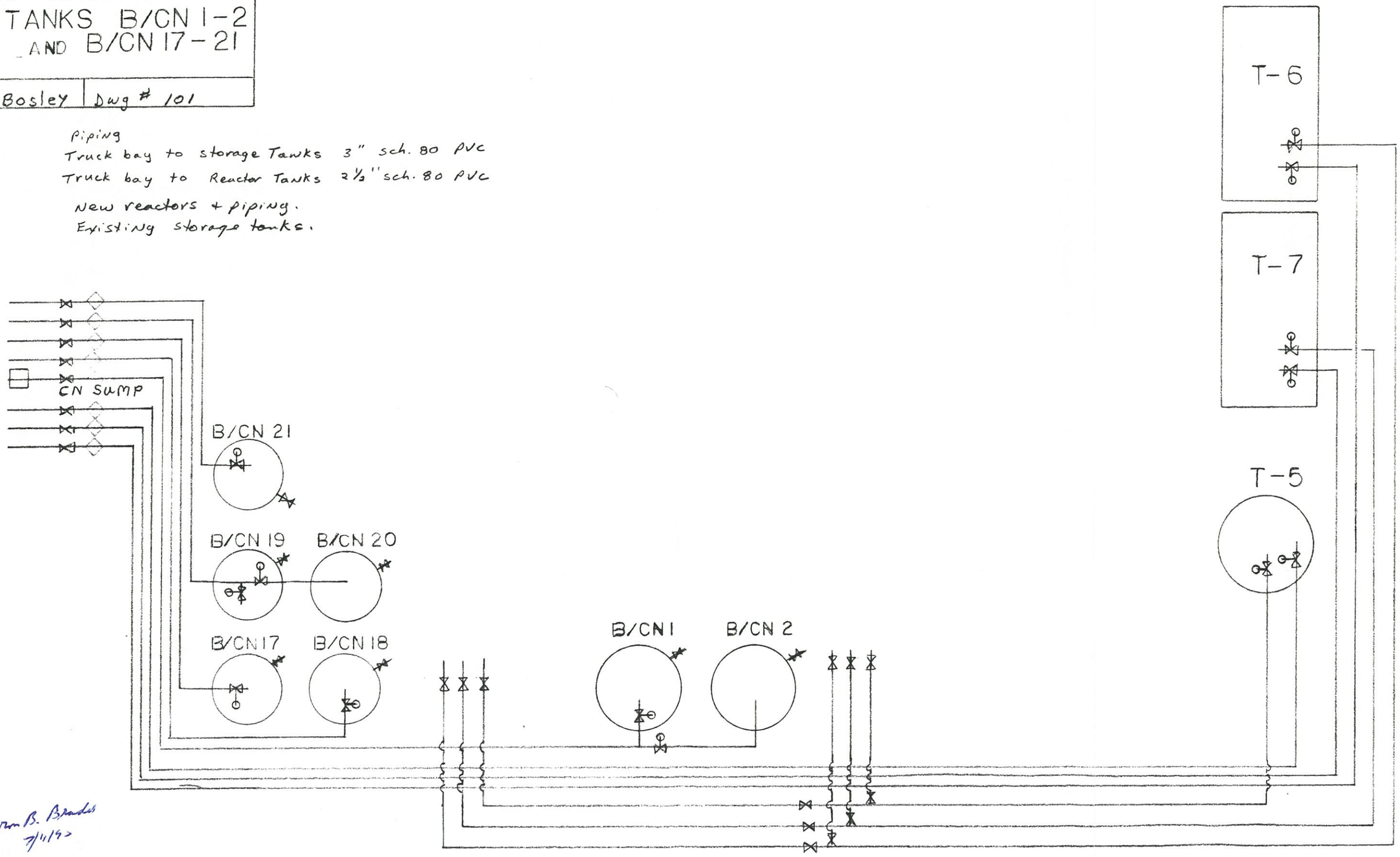
PIPING DIAGRAM FOR TANKS B/CN 1-2 AND B/CN 17-21

2-17-90

by Jim Bosley | Dwg # 101

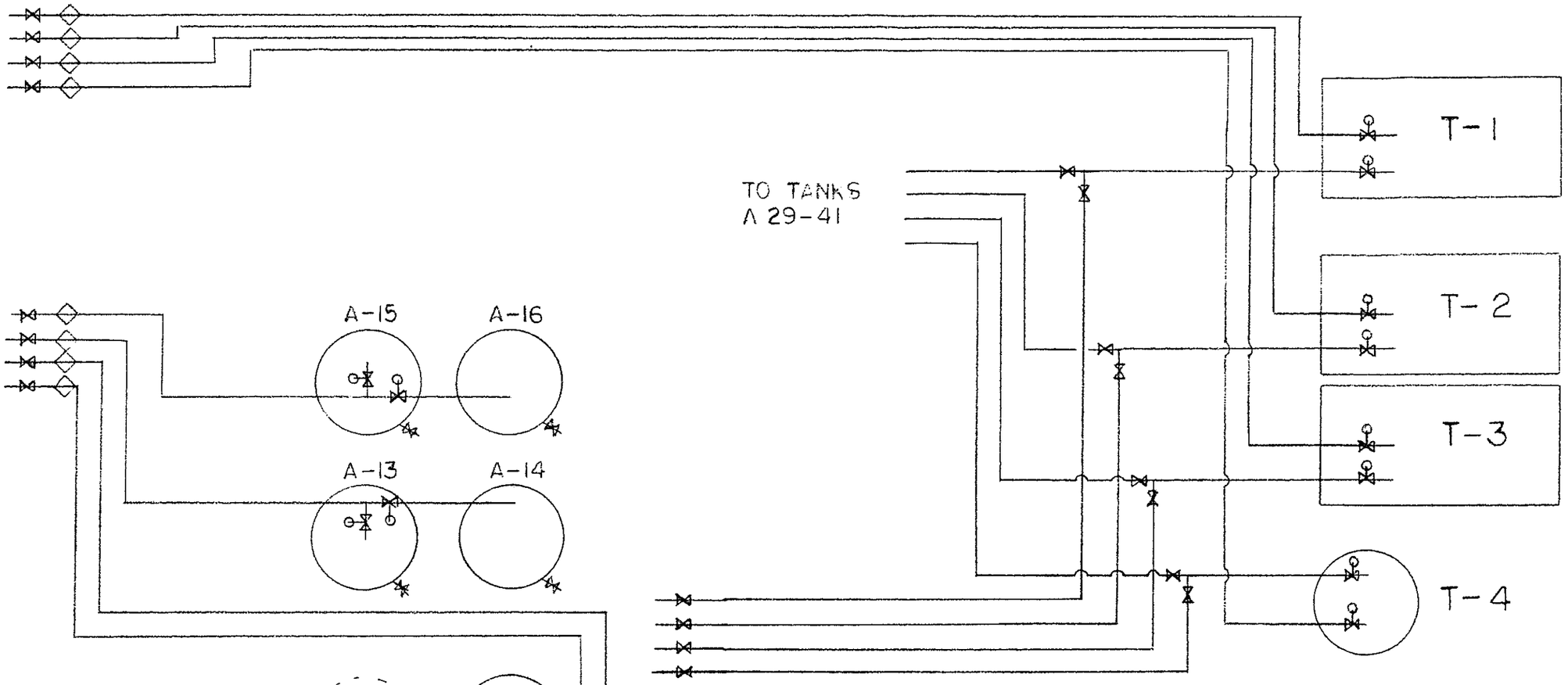
Piping
Truck bay to storage Tanks 3" sch. 80 PVC
Truck bay to Reactor Tanks 2½" sch. 80 PVC

New reactors + piping.
Existing storage tanks.



Bryan B. Brandis
7/11/90

#101



Piping
Truck bay to storage Tanks 3" sch. 80 PVC
Truck bay to reactor Tanks 2½" sch. 80 PVC
Storage bay to reactor Tanks 2½" sch. 80 PVC

Existing Tanks with New Piping

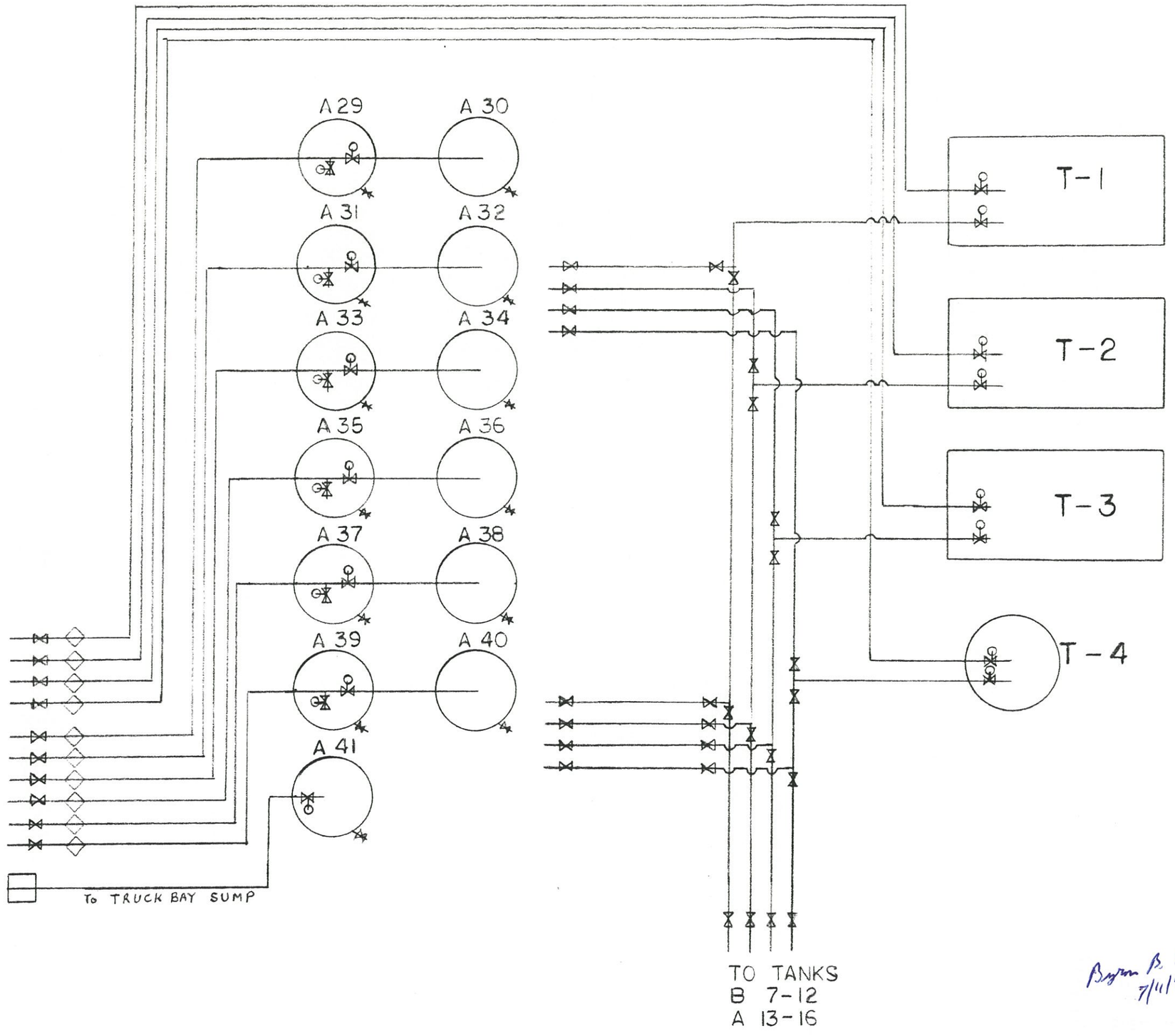
Byron B. Bosley
7/11/90

ETICAM

PIPING DIAGRAM FOR TANKS B 7-10 AND A 13-16

2-17-90

by Jim Bosley | Dwg # 102



Piping

Truck bay to storage tanks 3" sch 80 PVC
Truck bay to reactor tanks 2½" sch 80 PVC
Storage bay to reactor tanks 2½" sch 80 PVC

Existing reactor & storage Tanks with new piping

Byron B. Bosley 7/11/93

ETICAM

PIPING DIAGRAM FOR TANKS A 29-41

2-17-90

by Jim Bosley

Dwg # 103

ETICAM

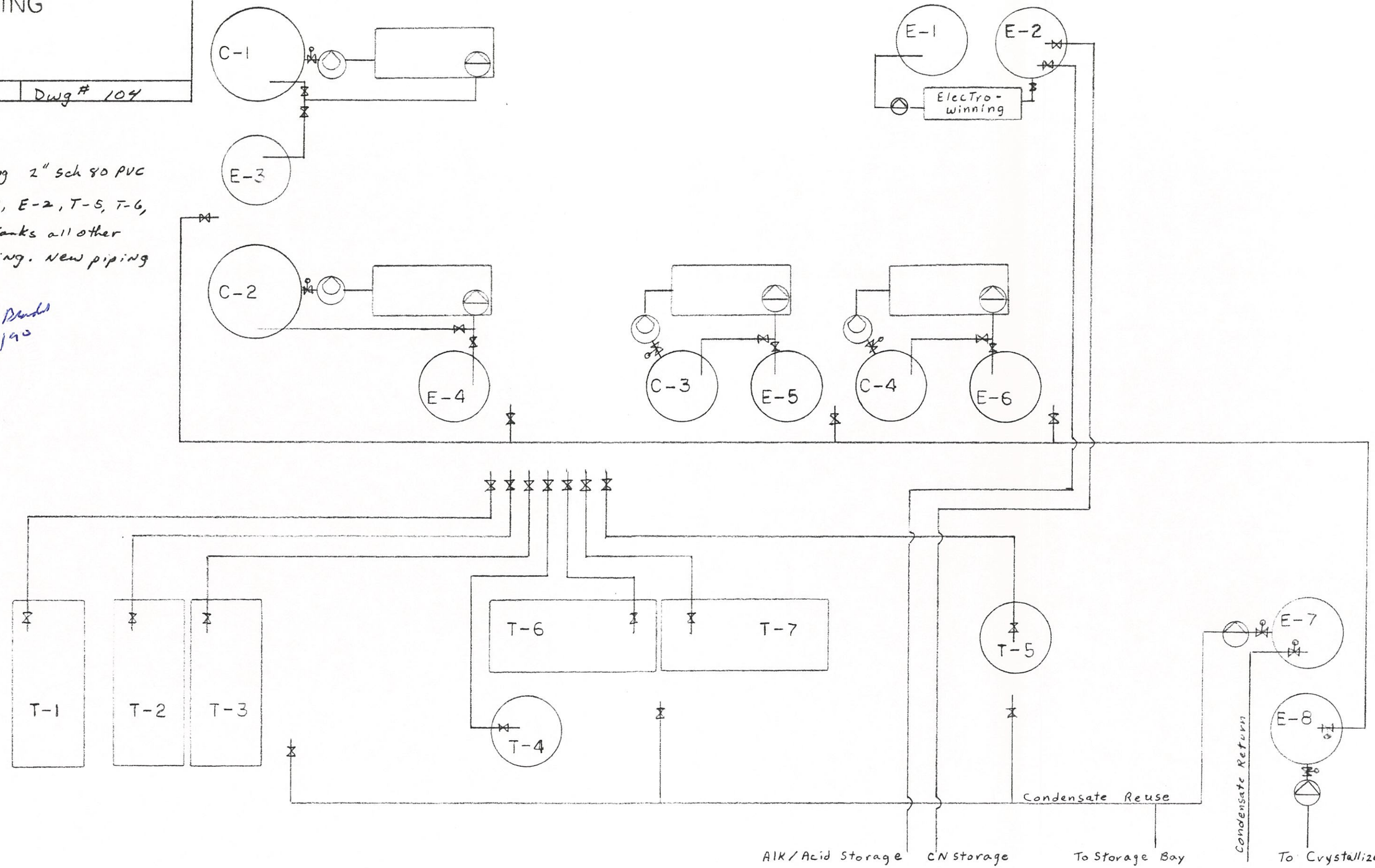
EFFLUENT PIPING

2-18-90

by Jim Bosley | Dwg # 104

Piping
Effluent piping 2" sch 80 PVC
C-1, C-2, E-1, E-2, T-5, T-6, + T-7 New Tanks all other Tanks existing. New piping layout

Bryan B. Bradley 7/11/90



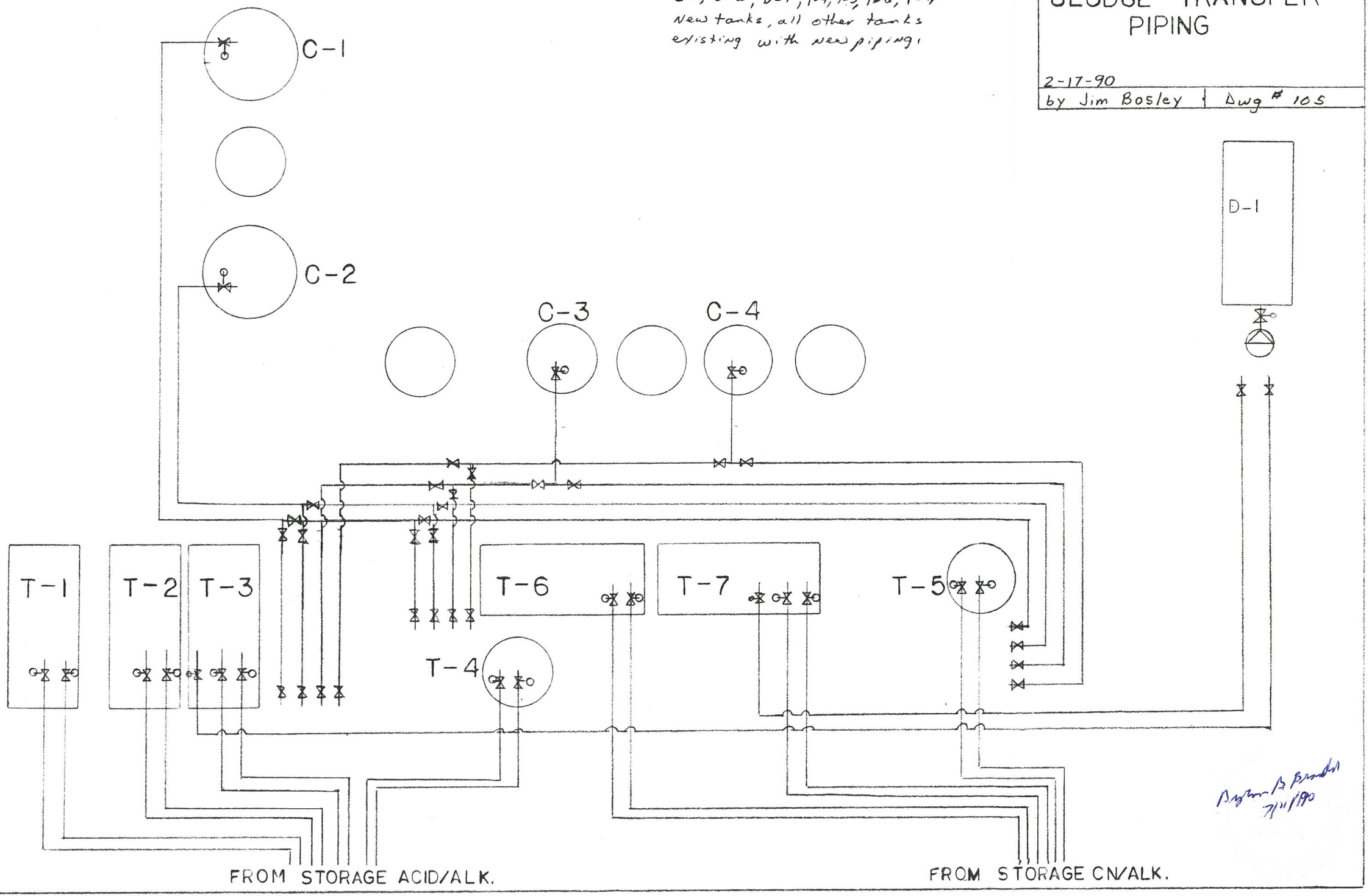
#104

Piping
sludge piping 2½" sch 80 PVC
C-1, C-2, D-1, T-4, T-5, T-6, T-7
New tanks, all other tanks
existing with new piping.

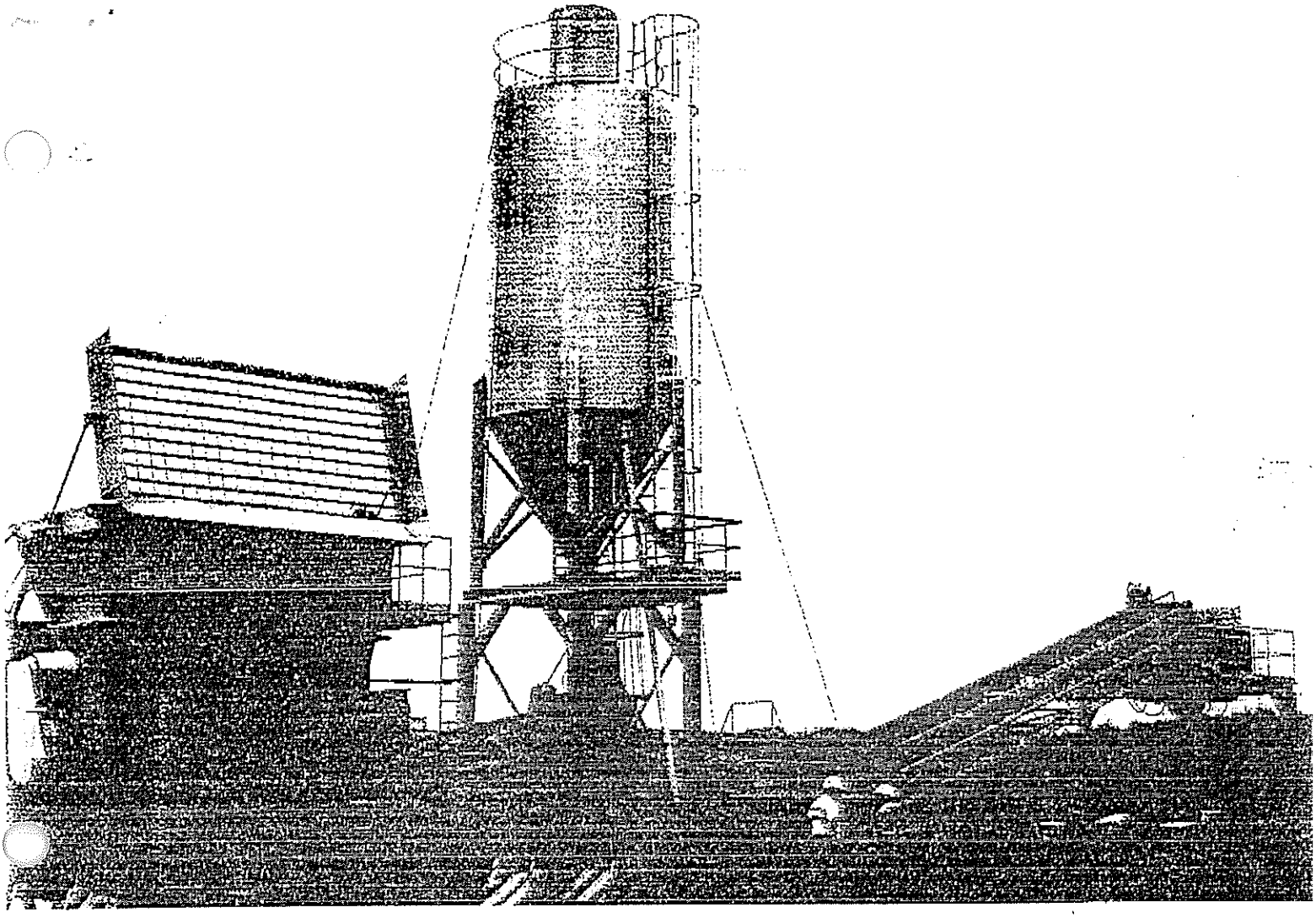
ETICAM

SLUDGE TRANSFER PIPING

2-17-90
by Jim Bosley | Dwg # 105



Barbara B Brooks
7/11/90



DAVIS MODULAR PUGMILL PLANTS

Custom-built equipment for controlled, high-capacity, continuous mixing to stabalize base materials, sludge or hazardous waste materials

In a typical, custom-designed plant, such as the one shown above, material is fed through a grizzly and into a hopper. Oversize material is trapped on the grizzly and prevented from entering the process. Material then feeds out of the bottom of the hopper through a variable-speed, twin screw feeder or belt feeder. As the material leaves the feeder, it drops onto a constant-speed feed conveyor. The material on the feed conveyor passes over a belt scale and is continuously weighed as it passes into the pugmill.

Cementitious material can be added from a silo through a rotary vane feeder located at the bottom of the cone. Upon exiting the rotary vane feeder, material passes through a solids flowmeter which continuously measures the flowrate. The material then proceeds into the pugmill mixing chamber.

Liquid can be added through a liquid pump. As liquid flows through the pump, flow is continuously measured by a liquid flowmeter. Liquid then flows through spray bars in the top of the pugmill chamber.

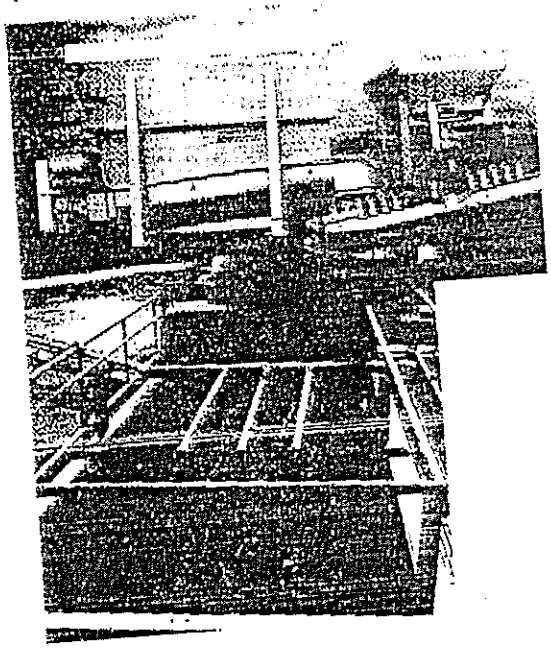
The operator inputs desired ratios into a control console keypad and, based on the electronic signals from the weighing devices, all of the materials are fed into the pugmill proportionally to produce a controlled mixture. The materials are then thoroughly mixed as they pass through the mixing chamber. When the stabalized material is discharged from the pugmill, it proceeds up an inclined discharge conveyor and into a surge hopper for loading.

Each plant can be customized to include various features. Provisions can be made to include feeding systems for increasing the number of materials comprised in the mixture. Different arrangements for the process equipment may also be designed in order to match specific plant needs. In general, each plant can be custom designed to handle various situations.

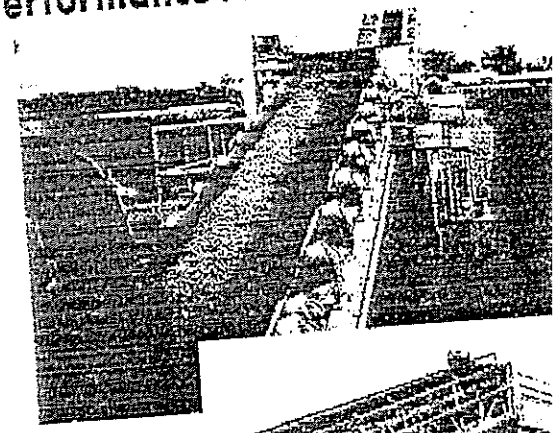
DAVIS PUGMILLS — The Industry Standard

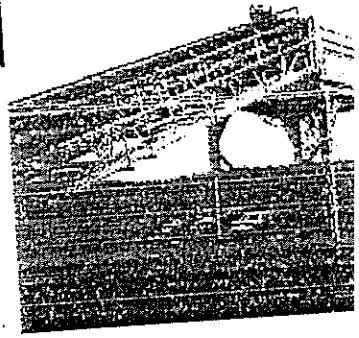
DAVIS MODULAR PUGMILL PLANTS

Features and Options For High Capacity and Top Performance For Your Applicatio

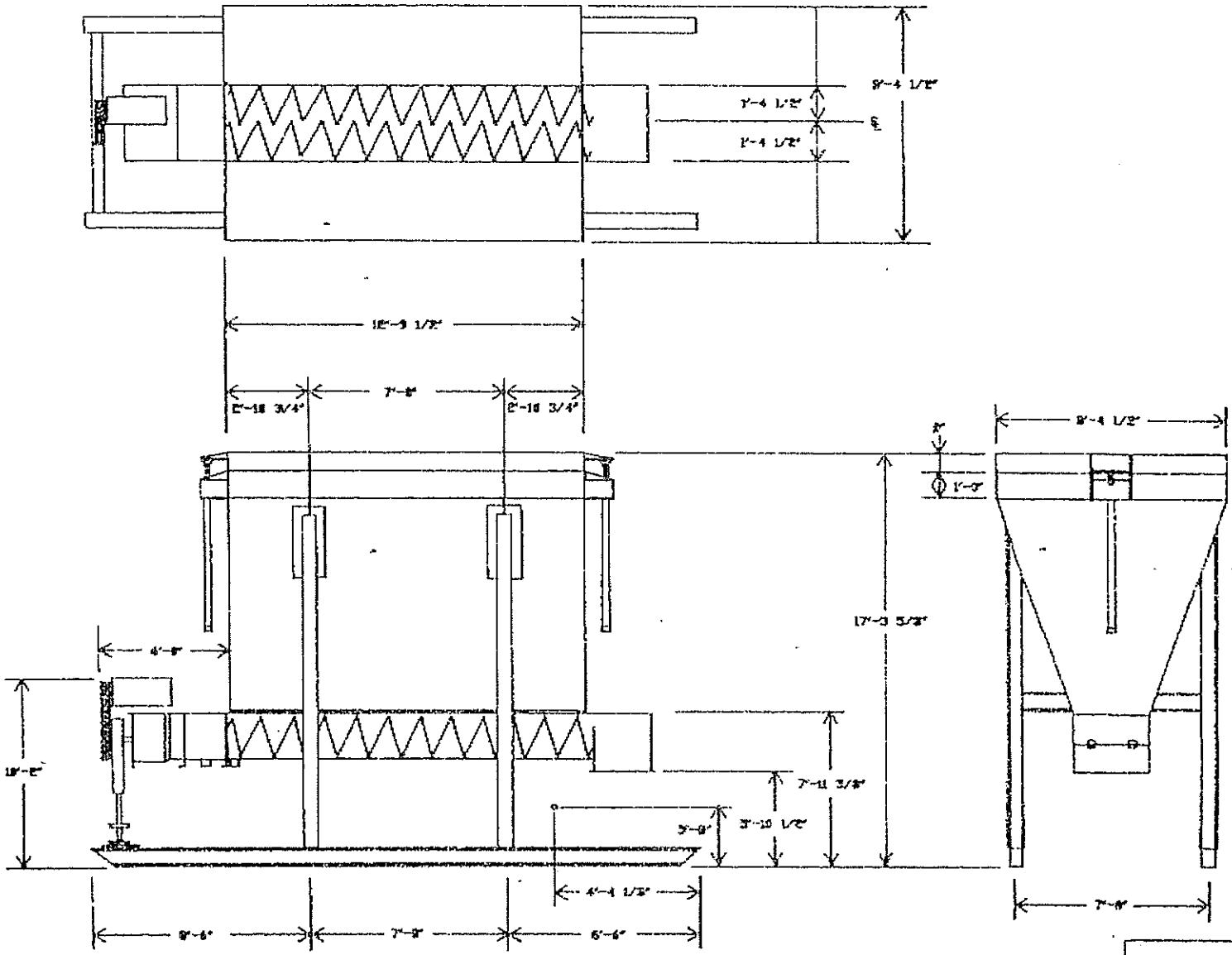


Pictured at left: Twin screw hopper feeds onto conveyor with belt scale. Reagents measured, mixed in pugmill. Liquids are added into mixing chamber.





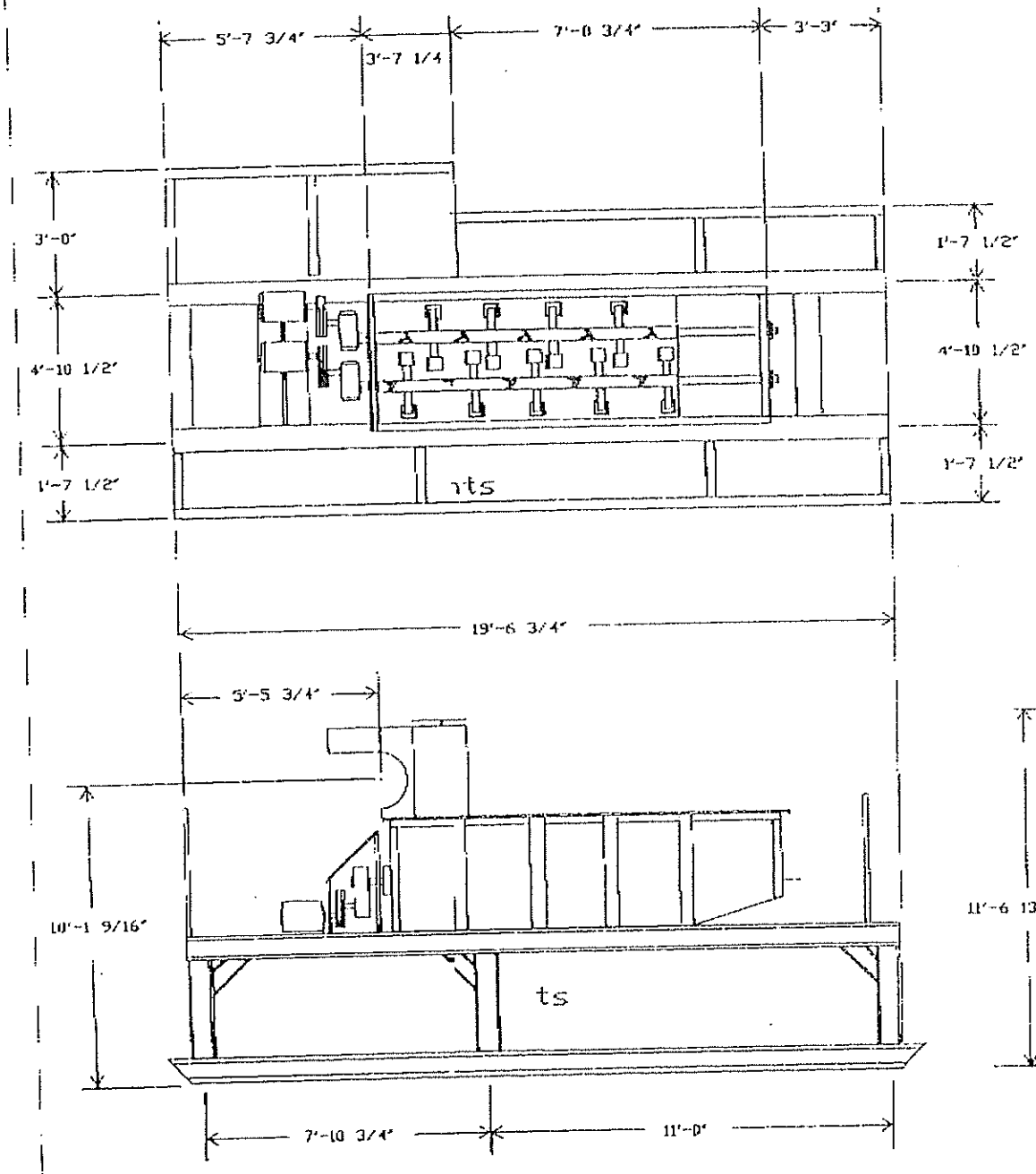
Above and right: Pugmill continuously receives material to be mixed. Mixed material conveyed to surge hopper for loading into trucks.



DAVIS PUGHILL, INC.
212 CEMETERY AVE.
COLUMBIA, TN. 38401
615-254-5734

TITLE 25 YARD TWIN SCREW FEEDER

SHEET 1



DAVIS PUGHILL, INC.
212 CEMETERY AVE.
COLUMBIA, TN. 38401
615-254-5734

TITLE KOBEL 500 HV PUGHILL

SHT 2

SCRUBBER SYSTEM

ETICAM

June 11, 1990

Lowell Shifley
Air Quality Division
Nevada Division of Environmental Protection
123 West Nye Lane
Capitol Complex
Carson City, NV 89710

Re: Air Permit Amendment - New Scrubber Addition
Operating Permit Number 1615

Dear Mr. Shifley,

ETICAM is requesting an amendment to the operating permit to include the following additions:

1. A second two stage scrubber drawing air from two new process reactors and one or more existing process reactors as required for the type material being processed. The new scrubber is essentially identical to the two stage scrubber previously installed, and will also discharge into the main building scrubber. The attached drawings show a schematic diagram, dated June 11, 1990, and details of the scrubber being purchased from Tonada Corp.

2. The addition of two reactors, and a dissolution tank, which will be used to reslurry solids for treatment. These solids will contain cyanides, and will be added to alkaline solutions containing bleach, and pumped to a cyanide reactor for treatment.

The attached flow diagram shows the revised schematic with revisions highlighted in bold outline. Note that the additional scrubber and sources will be vented into the main two stage building scrubber. No revisions are requested in the discharge parameters for the main scrubber.

NEW SOLIDS HANDLING DUST COLLECTOR

A separate permit application is being submitted under separate cover for new sludge unloading and drying facilities. This system will utilize an independent bag house dust collector for these facilities.

Rhode Island
Corporate/Sales:
410 South Main Street
Providence, RI 02903
Telephone: (401) 831-7242
1-800-541-8673
FAX: (401) 831-7383

Rhode Island
Plant:
25 Graystone Street
Warwick, RI 02886
Telephone: (401) 738-3261
FAX: (401) 738-1073
EPA# RID 980906986

Nevada
2095 Newlands Dr. E.
Fernley, NV 89408
Telephone: (702) 575-2760
1-800-648-9931
FAX: (702) 575-2803
EPA# NVD 980895338

Texas
3201 Lucius McCelvey Drive
Temple, TX 76500
EPA# TXD 981903768

Illinois
3001 Highway #3
Granite City, IL 62040
EPA# ILD 981531643

STACK TEST SCHEDULE

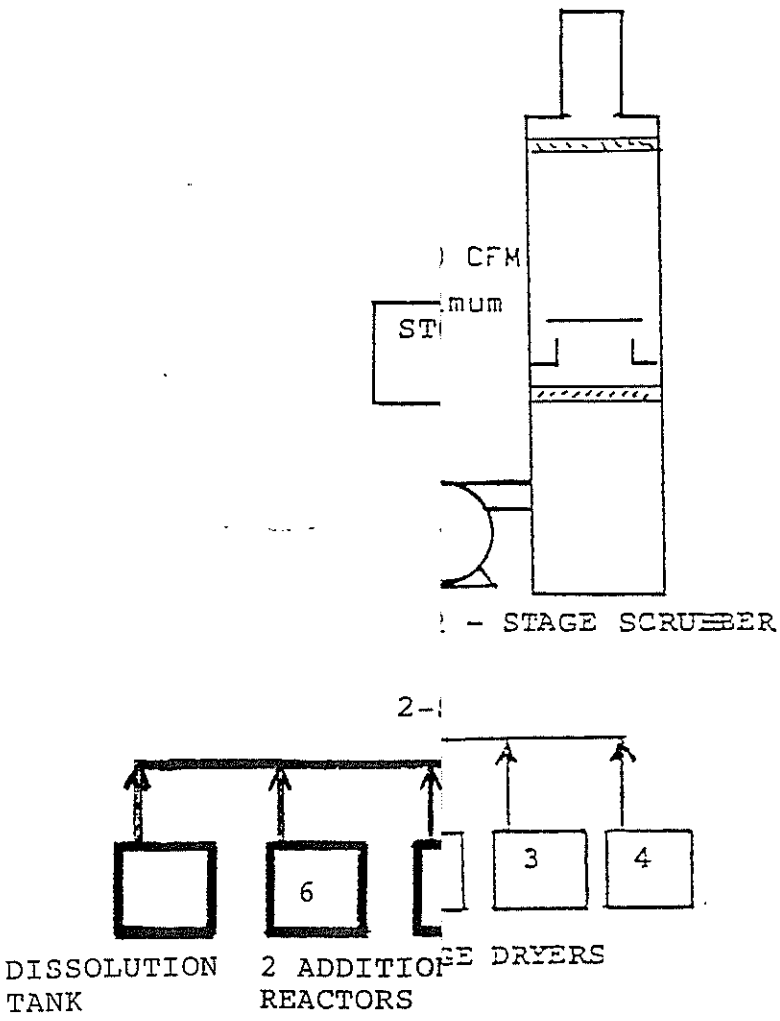
It is requested that an extension be granted for the annual stack test to allow testing of both the scrubber and new bag house after they are installed and operational. These facilities are currently planned to be operating in August, 1990, and therefore the test could be performed by the end of September.

Sincerely,

Byron B. Bradd

Byron B. Bradd, P.E.
General Manager

cc: Dan Gross, NDEP



SCHEMATIC DIAGRAM
OF PLANT VENT &
SCRUBBER SYSTEM

June 11, 1990

DUST COLLECTOR

ETICAM

June 12, 1990

Lowell Shifley
Air Quality Division
Nevada Division of Environmental Protection
123 West Nye Lane
Capitol Complex
Carson City, NV 89710

Re: Permit Application for Permit to Construct
New Dust Collection System for Plant Modifications

Dear Mr. Shifley,

Attached is our application for a "Air Quality Permit to Construct" for a solids receiving, handling and drying process with a bag house dust collector control system. These modifications have also been submitted to the Waste Management Section for a Part B permit modification. (Application dated December 28, 1989)

A check for $ 100.00 is enclosed for a single source with a throughput of less than 50 tons per hour.

Sincerely,

Byron B. Bradd

Byron B. Bradd, P.E.
General Manager

cc: Greg A. Remer, NDEP
Dan Gross, NDEP

Rhode Island
Corporate/Sales:
410 South Main Street
Providence, RI 02903
Telephone: (401) 831-7242
1-800-541-8673
FAX: (401) 831-7383

Rhode Island
Plant:
25 Graystone Street
Warwick, RI 02886
Telephone: (401) 738-3261
FAX: (401) 738-1073
EPA# RID 980906986

Nevada
2095 Newlands Dr. E.
Fernley, NV 89408
Telephone: (702) 575-2760
1-800-648-9931
FAX: (702) 575-2803
EPA# NVD 980895338

Texas
3201 Lucius McCelvey Drive
Temple, TX 76500
EPA# TXD 981903768

Illinois
3001 Highway #3
Granite City, IL 62040
EPA# ILD 981531643

State of Nevada
Division of Environmental Protection
Air Quality Section
201 South Fall Street
Carson City, Nevada 89710

APPLICATION FORM AIR QUALITY PERMIT TO CONSTRUCT / OPERATING PERMIT

1. Parent Organization Name and Address * [X]

ETICAM
2095 Newlands Dr. E.
Fernley, Nevada, 89408

2. Division of Parent Organization Name and Address * [X]

ETICAM
2095 Newlands Dr. E.,
Fernley, Nevada, 89408

3. Project Name and Address

ETICAM
2095 Newlands Dr. E.
Fernley, Nevada 89408

4. Air Pollution Contact (Company Representative)

Mr. Byron Bradd, General Manager
ETICAM
2095 Newlands Dr. E.,
Fernley, Nevada, 89408 phone: (702) 575-2760

* Please indicate by checking appropriate box, the name and address to appear on permit to construct and/or operating permit.

NAQP1-a
Rev. 12/88

5. Project Location

a. Nearest City or Town Fernley, Nevada

b. Section 6; Township 20-N; Range 25-E

6. Flow Diagram of Entire Process (please attach)

7. Plot Plan of Facility (please draw to scale and attach)

8. USGS 7½' or 15' Map (please attach) Indicating the Following

a. Exact location of entire process facility

b. Property boundary

9. Permit to construct application in which computer models are utilized for demonstrating compliance with ambient air quality standards must include a complete original or copy containing the model name, revision date and a full listing of input parameters and results. Submission of these demonstrations can be made within the original copy of the application or under a clearly labeled separate cover.

NOTE: THE AIR QUALITY PERMIT FEES WILL BE DETERMINED UPON RECEIPT OF THE APPLICATIONS, AND THE APPLICANT WILL BE NOTIFIED OF THE AMOUNT TO SUBMIT.

NOTE: IF ALL APPLICABLE INFORMATION IS NOT COMPLETED, THE APPLICATION WILL BE CONSIDERED INCOMPLETE AND MAY BE RETURNED.

NOTE: A CONDITION OF PERMIT ISSUANCE WILL BE THAT THE PERMIT HOLDER ALLOWS INSPECTION OF THE PREMISES BY THE REPRESENTATIVES OF THE DEPARTMENT AT ANY TIME DURING ITS HOURS OF CONSTRUCTION AND/OR OPERATION, WITHOUT PRIOR NOTICE.

The information contained in this application is accurate to the best of my knowledge. Any changes in the proposed project must be reported to the Division of Environmental Protection, Air Quality Section, at least 15 days prior to implementation of the proposed change!

x Byron B. Bush

Signature of Company Representative

6/12/96

Date Signed

NAQP1-b
Rev. 12/88

INDUSTRIAL PROCESS

1. Type of equipment Dryer (See attachment A)
2. Manufacturer of equipment Fenton Environmental Technologies
3. Model number 230-20M Serial number See Attachment A
4. Date equipment manufactured June 1990
5. Date equipment purchased June 1990
6. Please check one: _____ Portable; XX Stationary
7. Design capacity (tons per hour) 3 total
8. Projected operating rate (tons per hour) 2
8a. If crushing, size output setting No size reduction occuring inches
9. Projected operating time: time of day 0000 to 2400
   Hours per day 24 Days per year 365
10. Primary material processed* Metal Plating Sludges
    *For precious metal ore, please specify moisture content of ore (if 4% or greater please submit a copy of t analysis)
11. Alternate material(s) used in process and tons per hour
    Metal bearing solids and sludges (See Attachment B)
12. Fuels used in process: coal ____, oil ____, gas XX, other (please specify) _____
    a. Amount used per hour (please specify tons, gallons, cubic feet or other) each at 3,000 cf/hr max (6,000 cf/hr total)
    b. Btu per hour, Btu per pound, Btu per gallon, or other (please specify) 3×10^6 btu/hr/unit (Total = 6.0 mm btu/hr)
    c. Ash content, % (if applicable) n/a
    d. Sulfur content, % (if applicable) n/a
    e. Other trace elements, % (please specify, if applicable) n/a
13. Pollution control equipment (this must be completed)
    a. Type of pollution control equipment (i.e., water sprays, baghouse, etc.) Baghouse - Model 210 WM 120
    b. Manufacturer California Clean Air, Inc.
    c. Manufacturer's guaranteed control efficiency, % 0.02 gr/ft^3

d. Projected mass rate or grain loading (if applicable) at design capacity:

	Into Control Equipment	Out of Control Equipment
Particulate	0.21 gr/ft^3	0.02 gr/ft^3
Sulfur	n/a	n/a
Carbon monoxide	n/a	n/a
Hydrocarbons	n/a	n/a
Oxides of nitrogen	n/a	n/a
Lead	0.02	0.002
Other (specify)		
See Attachment B		

14. Pollutant discharge exit parameters (ex. baghouse, wet scrubber stack or uncontrolled po of emission)

(1) Height of pollutant discharge point (ft. from ground level) 55

(2) Stack inside diameter (feet) 2 ft

(3) Temperature (°F) at design capacity 240

(4) Velocity (feet per second) 55 fps

(5) Gas volume flow rate in cubic feet per minute (please specify actual or standard) 11,000 ACFM

15. Expected date for start of construction (required only for application for permit to construct) June 25, 1990

16. Estimated date for startup (required only for application for permit to construct) August 1, 1990

NOTE: IF ALL APPLICABLE INFORMATION IS NOT COMPLETED, THE APPLICATION WILL CONSIDERED INCOMPLETE

NOTE: A CONDITION OF PERMIT ISSUANCE WILL BE THAT THE PERMIT HOLDER ALLOWS INSPECTI OF THE PREMISES BY THE REPRESENTATIVES OF THE DEPARTMENT AT ANY TIME DURING I HOURS OF CONSTRUCTION AND/OR OPERATION, WITHOUT PRIOR NOTICE.

The information contained in this application is accurate to the best of my knowledge. Any changes in the proposed project must be reported to the Division of Environmental Protection, Air Quality Section, at least 15 days prior to implementation of the proposed change.

x Bryan B. Stitt
Signature of Company Representative

6/12/90
Date Signed

2. EQUIPMENT DESCRIPTION

The major components of the solids handling portion of the Class 2 Part B (Less than 25% Tank Volume) Facility Expansion are listed below. Purchase Orders for these components have been issued and the subject equipment is being manufactured.

Equipment serial numbers are not available at this time. The functions of the system components are described in more detail in Sections 4 and 5.

D - 2 Dryers

Manufacturer:	Fenton Environmental Technologies
Function:	Dry product material prior to packaging for sale to prospective customers.
Model Number:	230-20M
Max Capacity:	1.5 tph per dryer - 2 included
Operating:	1.0 tph per dryer - 2 included

DC - 1 Dust Collector

Manufacturer:	California Clean Air
Function:	Capture particulate material prior to emissions of off gas through stack.
Model Number:	210-WM-120
Max Capacity:	12,000 acfm
Operating:	11,000 acfm
Performance:	0.02 gr/ft3

F - 2 Feeders

Manufacturer:	JC Steele
Function:	To feed input raw material at a controlled rate from the truck hopper to the material transfer conveyors.
Model Number:	88C
Max Capacity:	6 tph
Operating:	3 tph

Connecting Material Transfer Conveyors

Manufacturer:	Aggregate Systems, Inc. Fernley, Nevada
Function:	Transfer Solids from receiving hopper to dissolution tank, dryer, or containers for shipment.
Model No:	Custom Design
Max Capacity:	6 Tons per hour, each system
Operating:	3 Tons per hour

SP-1 Conveyor/bag rack

Manufacturer:	Fenton Envronmental Systems
Function:	Fill containers with dryed product
Model Number:	None
Capacity:	Approximately 3 tons/hour

4. OPERATING DESCRIPTION

The Fernley facility is permitted to handle both liquids and solids. The initial installation was designed to handle primarily liquid wastes, with a small system to process facility generated sludges. Many waste generators have recently installed their own treatment plants, and generate a metal bearing sludge. The sludge waste market has increased while the liquid waste market has been declining. The expansion is required to service this changing waste market.

The purpose of this project is to add additional solids processing equipment. The block process flow diagram describing the process steps is shown on Figure 1.

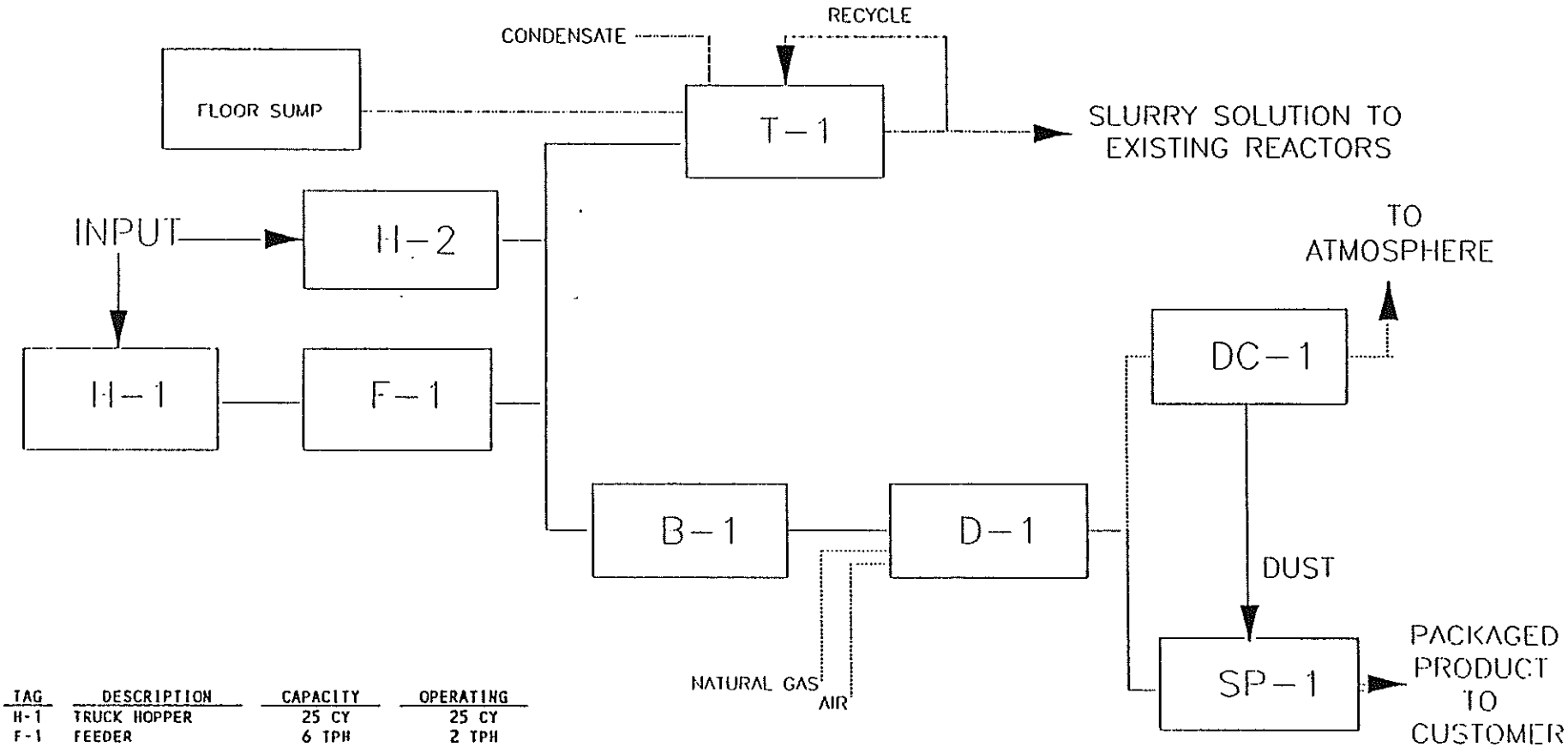
Raw material consisting of either semi-solid or solid sludges/filter cakes is received in one of two hoppers (H-1 or H-2). The raw material may be received by truck or in smaller drum or bin-sized quantities. Depending on the composition of the raw material, the received material may be processed by one of two process trains. Material received by the truck hopper (H-1) is loaded onto conveyor belts by a JC Steele model 88C auger feeder which controls the feed rate to the process trains. Material received in the drum hopper (H-2) is received in smaller quantities and is dumped directly onto the conveyor belts leading to the process trains.

Both hopper systems will be capable of conveying solids to the dissolution tank, dryers, or directly to a bagger. Material fed to the dissolution tank will include filter cakes that contain cyanide, sulfides, or similar properties where treatment is required. These materials will be conveyed into the dissolution tank from which the slurry will be pumped to reactors for pH adjustment, oxidation, or other treatment in order to change the waste composition prior to further handling. Some solids will undergo a metal extraction step to recover metal components.

The water solvent for the dissolution tank will consist of recycled treated water, floor washdowns, scrubber blowdowns, etc. The pH will be adjusted and bleach will be added to prevent the generation of cyanide vapors when cyanide sludges are unloaded.

Note that this tank is covered and vented to the new two stage caustic scrubber. This scrubber further vents into the existing building scrubber which is continuously monitored for cyanide vapors. A new cyanide monitor will be installed for area monitoring of potential cyanide vapors which might escape from the tank.

Drying is accomplished by direct fired, natural gas burners. Ambient air is used to provide the oxygen for combustion. The firing rate of the combined burners of both dryers is estimated at 6,000 cubic feet of natural gas per hour. The dryer off gas will be contained in ducts and will be treated by a dry dust collection system (DC-1) prior to discharge to the atmosphere. Particulate matter captured by the dust collection system will be returned to the process.



TAG	DESCRIPTION	CAPACITY	OPERATING
H-1	TRUCK HOPPER	25 CY	25 CY
F-1	FEEDER	6 TPH	2 TPH
H-2	DRUM HOPPER	2 CY/HR	1.5 CY/HR
T-1	DISSOLUTION TANK	6 TPH	2 TPH
B-1	DRYER BIN FEEDER	6 TPH	1.5 TPH
D-1	DRYER	3 TPH	2 TPH
DC-1	DUST COLLECTOR	11,000 CFM	11,000 CFM
SP-1	PRODUCT PACKAGING	3 TPH	2 TPH

NOTE:
Diagram typical of each system.
Application includes 2 systems and
1 dust collector.

KENNEDY/JENKS/CHILTON

ETICAM 25% EXPANSION
PROCESS FLOW DIAGRAM

K/J/C 907001.00

MAY 1990

FIGURE 1

5. DUST COLLECTION SYSTEM DESCRIPTION

The dust collection system will collect and treat the off gas emissions from the Fenton Environmental Technologies dryer and a variety of ventilation points throughout the facility expansion. A block flow diagram describing the dust collection system is shown on Figure 2. The dust collection system consists of three constituents: (1) cyclone, (2) drop out chamber, and (3) a California Clean Air model 210-WM-120 bag house with ancillary instrumentation and fan.

The filtered off gas will be discharged through a 55-feet high, 24-inch diameter stack. The estimated flow rate of air to be treated is 11,000 acfm at a temperature of 240° F. The dust collection system is designed for a maximum air flow of 12,000 acfm at a temperature of 400° F.

The dryer off gas volume is estimated at approximately 4,000 acfm and is expected to be discharged at a temperature of 600 F. The dryer off gas will initially pass through a cyclone. During normal operating conditions, the cyclone treated off gas will enter the duct and mix with air from the other dust collection points.

In the event of an emergency such as a dust collector blockage, the dryer off gas shall be discharged through a bypass damper to the facility's existing scrubber duct system while the dryer shutdown sequence is initiated. During the periods of emergency conditions, the dryer will be operated at reduced capacity if needed. The dryer will continue to rotate in order to minimize equipment damage.

It is anticipated that the majority of the particulate loading will originate from the dryer operations.

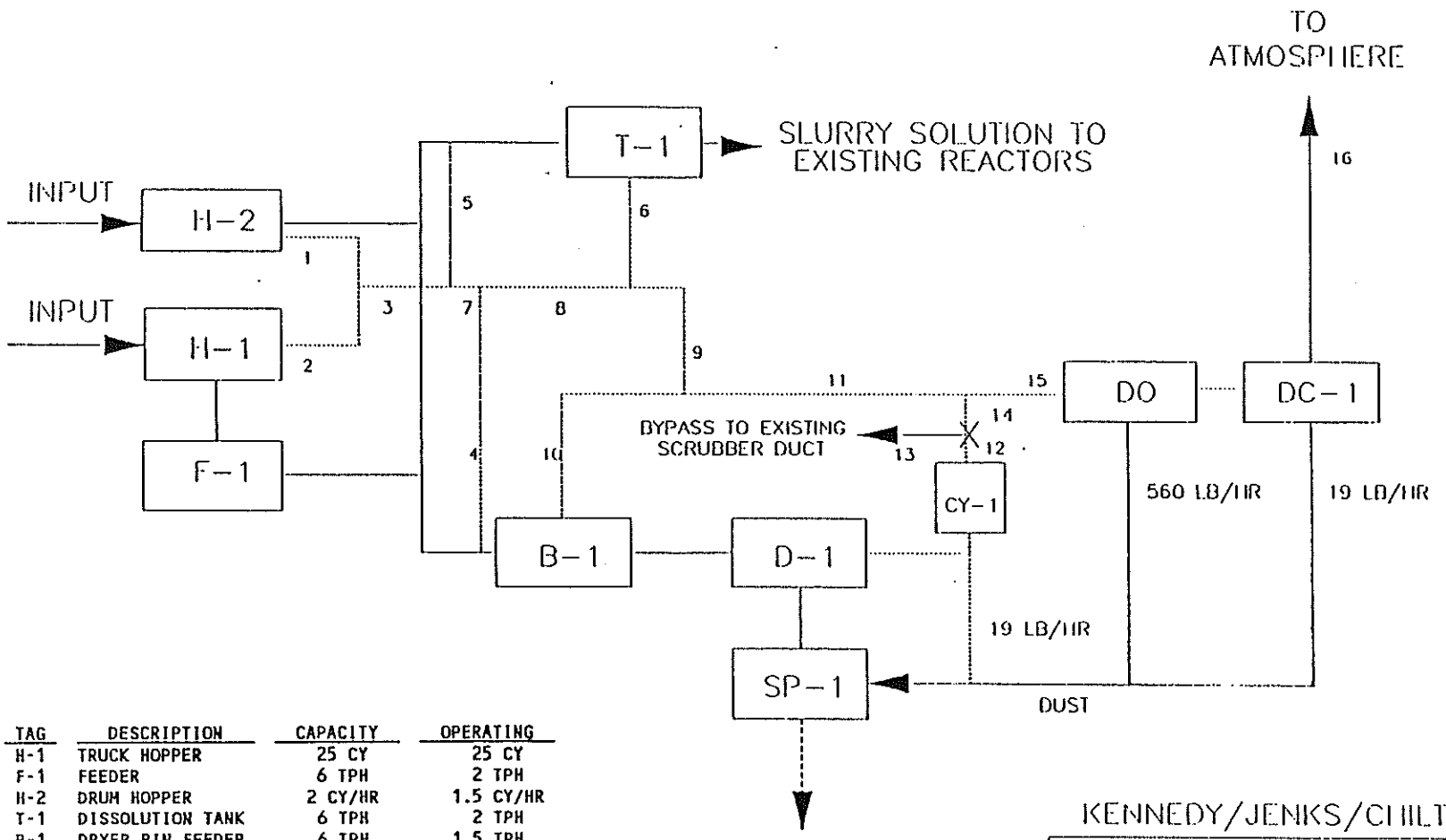
A number of dust collection points are connected to the ventilation system. These ventilation system collection points are generally located at material transfer points located through the two process trains. The contribution of air flow from the ventilation system to the dust collection system is approximately 3,000 to 7,000 acfm, depending on the dryer load in operation. Initially, some of these collection points will only serve to decrease the temperature of the off gas prior to treatment by the bag house and should not contribute significantly to the particulate loading.

The typical filter cake received will be damp and is not expected to create dust when dumped and conveyed. Additionally, all trucks will be totally inside the building to minimize the potential of dust escaping to the environment. The dust collection hood design for the receiving hopper will be fabricated with flexible plastic strips to form a curtain wall.

The combined off gas flow from the ventilation collection system and the dryer will be conveyed to a drop out chamber. It is anticipated that the majority of the particulate material will be collected in the drop out chamber. Finally, the off gas will be treated by the California Clean Air bag house. The manufacturer's performance standard for this equipment is 0.02 gr/ft^3. Assuming that the manufacturer's performance standard is obtained, the maximum particulate emission rate is estimated to be approximately 2.06 lb/hr. The captured particulate (estimated to be 600 lb/hr) will be combined with the dryer product for packaging and distribution to the customer.

DUCT SCHEDULE

DUCT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SIZE	8	14	18	5	5	5	18	18	18	8	20	10	10	12	23	24
CFM	1350	3000	4350	525	525	350	4875	5400	5750	1200	6950	4000	0	4000	10950	10950



TAG	DESCRIPTION	CAPACITY	OPERATING
H-1	TRUCK HOPPER	25 CY	25 CY
F-1	FEEDER	6 TPH	2 TPH
H-2	DRUM HOPPER	2 CY/HR	1.5 CY/HR
T-1	DISSOLUTION TANK	6 TPH	2 TPH
B-1	DRYER BIN FEEDER	6 TPH	1.5 TPH
D-1	DRYER	3 TPH	2 TPH
DC-1	DUST COLLECTOR	11,000 CFM	11,000 CFM
SP-1	PRODUCT PACKAGING	3 TPH	2 TPH

NOTE:
Diagram typical of each system.
Application includes 2 systems and
1 dust collector.

KENNEDY/JENKS/CHILTON

ETICAM 25% EXPANSION
DUST COLLECTION FLOW DIAGRAM

K/J/C 907001.00

MAY 1990

FIGURE 2